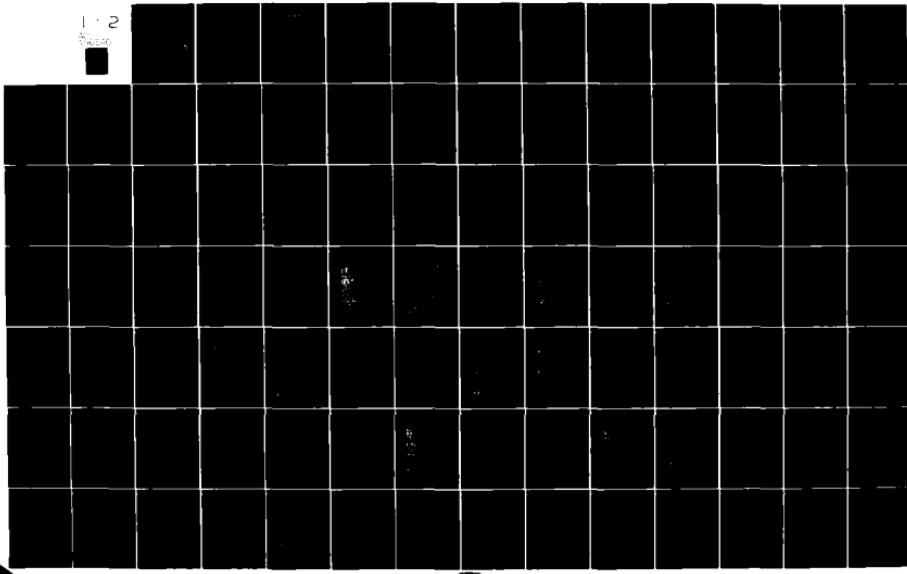
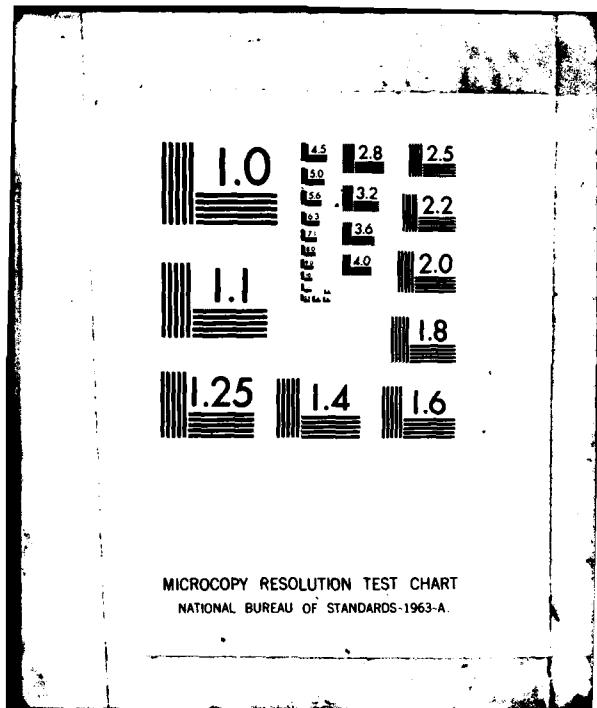


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Benthic Community Response to Dredging Borrow Pits, Panama City Beach, Florida

by

Carl H. Saloman, Steven P. Naughton, and John L. Taylor

MISCELLANEOUS REPORT NO. 82-3

MARCH 1982

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Hydrological measurements were limited to water temperature and salinity. Analysis of surface sediments included particle-size distribution, carbon chemistry, and statistical properties of mean grain size, sorting, skewness, and kurtosis. Average and extreme periods of water temperature and salinity were recorded. Regional nearshore sediments proved to be fine sand, containing less than 1 percent silt-clay, that was moderately well to well sorted, symmetrical to coarsely skewed, and leptokurtic. Total carbon content averaged less than 0.30 percent, and most of that occurred in the form of carbonate deposits. Over a postdredging study period of 1 year, sediment samples from borrow pits showed little variation from these general features.

In studies of the benthos, 362 species and 58,068 individuals were recorded among 14 invertebrate phyla and bony fishes. Dominant groups by species and abundance included annelida, mollusca, and arthropoda (crustacea). Faunal comparisons between dredged and undredged areas were made on the basis of species richness and abundance, the Shannon-Weaver index of diversity (H'), Pielou's index of equitability (J'), Morisita's index of faunal similarity (together with matrices and classification diagrams derived from that index), and two statistical derivations, based on diversity and abundance data, that were designed to show sample-to-sample faunal variations and the time period required for faunal recovery in borrow pits. Information obtained from these procedures showed that recovery began soon after dredging and was complete, or nearly so, within 1 year.

These results were similar in most respects to those from study of offshore dredging elsewhere in comparable geographic settings. Even so, the need for close association between ecological research and coastal engineering programs is emphasized.

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PREFACE

This report gives preconstruction and postconstruction environmental data related to short-term effects of beach nourishment at Panama City Beach, Florida. Areas of study included water quality, sediments, and benthic invertebrates. Dredging and beach restoration were done by the U.S. Army Engineer District, Mobile, and research was sponsored by the U.S. Army Coastal Engineering Research Center (CERC), and by the National Marine Fisheries Service (NMFS), Gulf Fisheries Center, Panama City Beach, Florida. The work was carried out under the coastal ecology research program.

The report is based on data collected and compiled by Carl H. Saloman and Steven P. Naughton, NMFS, who assisted Dr. John L. Taylor, Taylor Biological Company, Inc., in preparing the report under CERC Contract No. DACW72-81-M-0198. Invaluable assistance with statistical programs and data processing was provided by Dr. S.A. Bloom, Department of Zoology, University of Florida, Gainesville. Editorial reviews were provided by E. Nakamura, NMFS, and by B. Hall, CERC.

The authors acknowledge the assistance of their colleagues for identification of the following faunal groups: Dr. R.W. Heard, Jr., Gulf Coast Research Laboratory, Ocean Springs, Mississippi (crustacea); and J.R. Hall, National Marine Fisheries Service, Washington, D.C. (mollusca). Identification of species in other groups was done by the authors with the aid of reference material available from NMFS.

E.J. Pullen, Chief, Coastal Ecology Branch, served as contract monitor for this report, under the general supervision of R.P. Savage, Chief, Research Division; he also assisted in the editorial review process and made arrangements for several technical aspects of manuscript preparation and publication.

Comments on this publication are invited.

Approved for publication in accordance with Public Law 166, 79th Congress, approved 31 July 1945, as supplemented by Public Law 172, 88th Congress, approved 7 November 1963.


TED E. BISHOP
Colonel, Corps of Engineers
Commander and Director

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CONVERSION FACTORS, U.S. CUSTOMARY TO METRIC (SI) UNITS OF MEASUREMENT

U.S. customary units of measurement used in this report can be converted to metric (SI) units as follows:

Multiply	by	To obtain
inches	25.4	millimeters
	2.54	centimeters
square inches	6.452	square centimeters
cubic inches	16.39	cubic centimeters
feet	30.48	centimeters
	0.3048	meters
square feet	0.0929	square meters
cubic feet	0.0283	cubic meters
yards	0.9144	meters
square yards	0.836	square meters
cubic yards	0.7646	cubic meters
miles	1.6093	kilometers
square miles	259.0	hectares
knots	1.852	kilometers per hour
acres	0.4047	hectares
foot-pounds	1.3558	newton meters
millibars	1.0197×10^{-3}	kilograms per square centimeter
ounces	28.35	grams
pounds	453.6	grams
	0.4536	kilograms
ton, long	1.0160	metric tons
ton, short	0.9072	metric tons
degrees (angle)	0.01745	radians
Fahrenheit degrees	5/9	Celsius degrees or Kelvins ¹

¹To obtain Celsius (C) temperature readings from Fahrenheit (F) readings, use formula: $C = (5/9) (F - 32)$.

To obtain Kelvin (K) readings, use formula: $K = (5/9) (F - 32) + 273.15$.

BENTHIC COMMUNITY RESPONSE
TO DREDGING BORROW PITS,
PANAMA CITY BEACH, FLORIDA

by

*Carl H. Saloman, Steven P. Naughton,
and
John L. Taylor*

I. INTRODUCTION

1. Background.

On the gulf coast of northwestern Florida, at Panama City Beach, major environmental alterations over the past 10 years have provided an exceptional opportunity to determine the degree and duration of these alterations associated with the practice of dredging and beach nourishment. Historically, these events have included the development of several engineering plans, the intervention of a major hurricane, an emergency dredging and beach restoration program, and several ecological studies related to disturbances caused by both the hurricane and the dredging.

In 1970, the Senate Committee on Public Works acknowledged an urgent need for beach erosion control and hurricane protection at Panama City Beach. This critical situation was referred to the U.S. Army Engineer District, Mobile, for study. In 1975, the Mobile District completed a feasibility report that contained recommendations for beach nourishment and maintenance along 29.8 kilometers of shoreline from the entrance to St. Andrew Bay, west to Philips Inlet (Wilson, 1975). During preparation of the report, the U.S. Army Coastal Engineering Research Center (CERC) sponsored a research program to determine ecological changes that could be expected from the dredging and coastal construction work. This investigation, which was conducted by the National Marine Fisheries Service (NMFS) between November 1974 and October 1975, involved the study of hydrology, sediments, and benthic fauna at two offshore stations, and at five stations on each of nine nearshore transects. Emphasis was placed on diversity, abundance, and distribution of bottom-dwelling invertebrates which are directly affected by dredging and redistribution of sediments (Saloman, 1976).

Before this investigation was completed, Hurricane Eloise struck Panama City Beach (25 September 1975). Winds up to 185 kilometers per hour and seas estimated at 9 meters caused severe erosion and extensive property damage (Saloman, 1976; Salsman and Ciesluk, 1978). In winter months that followed, high wind and waves associated with periodic cold fronts caused further shoreline erosion.

In anticipation of the storm, and realizing the opportunity to measure large-scale environmental changes alongshore, NMFS conducted an intertidal benthic survey that consisted of faunal sampling before the storm and during a 1-month period after the storm. The pattern of faunal disruption and recovery recorded in this unique study provided considerable insight into the sequence of population changes to be expected in the proposed beach nourishment program (Saloman and Naughton, 1977).

In the next year (July-August 1976), the Corps of Engineers funded an emergency dredging operation to restore the most ravaged beach areas and established berms to provide temporary protection against storms normally occurring during fall and winter seasons. Numerous borrow areas, 305 to 610 meters offshore (6- to 9-meter depth) were dredged and about 306,000 cubic meters of sand was pumped ashore at 23 distribution sites (U.S. Army Engineer District, Mobile, 1976).

At the same time, NMFS again conducted studies of the nearshore environment over a 3-month period prior to dredging, during dredging, and for about 6 months after dredging was completed. Benthic sampling sites were selected in nourishment areas and in unrestored areas. The location of the three nourishment areas coincided with the location of benthic base-line data collected in 1974 (Saloman and Naughton, unpublished data).

Based on emergency nourishment experience and the analysis of the Hurricane Eloise data collected, the Mobile District revised original plans for shoreline protection and maintenance at Panama City Beach. The revised plan included berm enlargement on the beach front and additions to height and width of backbeach dunes. Consequently, the volume of sand estimated for original construction was increased from 4 to 8 million cubic meters; and borrow areas formerly selected at 9-meter depths were relocated seaward along the 18-meter bottom contour (Wilson, 1976).

Onshore, the environmental impact of this latest plan can probably be predicted to a high degree of accuracy on the basis of findings in NMFS beach surveys in 1974 and 1976. Briefly stated, the results of these investigations showed that shallow, subtidal and intertidal faunas recover rapidly following major disturbances (natural or man-induced). A more recent study funded by CERC provides additional information on the long-term environmental effects of dredging in offshore borrow areas at Panama City Beach (Culter and Mahadevan, 1982). A study of short-term environmental effects of dredging in offshore borrow areas at Panama City Beach is the subject of the present report.

2. Purpose.

This report provides a comprehensive analysis of benthic data from studies designed to show short-term environmental effects of offshore dredging during the emergency restoration project at Panama City Beach in July-August 1976.

It is based on comparisons of hydrological, sedimentological, and biological data from collections at stations A and B in base-line studies that began in 1974 (Saloman, 1976), and from control and experimental samples taken by NMFS in undredged bottom and borrow areas over a 20-month period between April 1976 and November 1977.

II. STUDY AREA

Panama City Beach is located on the northwestern gulf coast of Florida about 145 kilometers east of Pensacola. The study area covers 35 kilometers and extends from West Pass at the entrance to St. Andrew Bay, to Philips Inlet (Fig. 1). The beach's sugarlike sand and exceptionally clear water are major attractions for about 2 million visitors annually. Tourism is a great economic asset and most of the beach has been developed to accommodate tourists and provide various types of recreation.

Regional meteorological and oceanographic conditions were described by Salsman and Ciesluk (1978). Climate is humid and subtropical. Average summer and winter air temperatures are 28° and 12° Celsius, with about the same water temperatures at respective seasons. Winds are 20 kilometers per hour or less at most times, and rarely exceed 37 kilometers per hour. From spring through late summer, the net wind direction is southerly, but between September and January, the direction shifts to northerly. Waves are usually about 0.9 meter; tides are diurnal, and tidal amplitude is normally about 0.6 meter; and tidal currents are generally below 4 kilometers per hour. However, during tropical storms and ahead of cold fronts, strong winds off the gulf produce waves, tides, and currents far greater than average. Even in less severe weather, beach sand is easily eroded because of its fine texture (0.1- to 0.2-millimeter median diameter). Seaward, a series of parallel sandbars protects the beach to some extent, but beyond, the featureless bottom slopes rather quickly to a 15-meter depth at 1.6 kilometers from shore. At greater depths, sediments are somewhat coarser and widely scattered limestone reefs appear in low relief.

III. SAMPLING STATIONS AND RATIONALE

The sampling data in this report were collected in about 9 meters of water at stations located offshore of Panama City Beach. As a matter of convenience, and for clarity, these stations have been separated into three groups since there were differences in their locations, sampling procedures, and objectives.

The first group includes stations A and B (Fig. 2) of the preconstruction investigation of 1974-75. Station A was located seaward of the Fiesta Motel about midway between West Pass and Philips Inlet. Station B was seaward of the Roundtower Motel, which is just east of Philips Inlet. The sampling schedule at these stations consisted of an initial collection in November 1974, and subsequent quarterly collections in February, May, and August 1975. Both were sampled before beach nourishment to determine seasonal environmental conditions (base-line data) in the zone designated for dredging (Saloman, 1976).

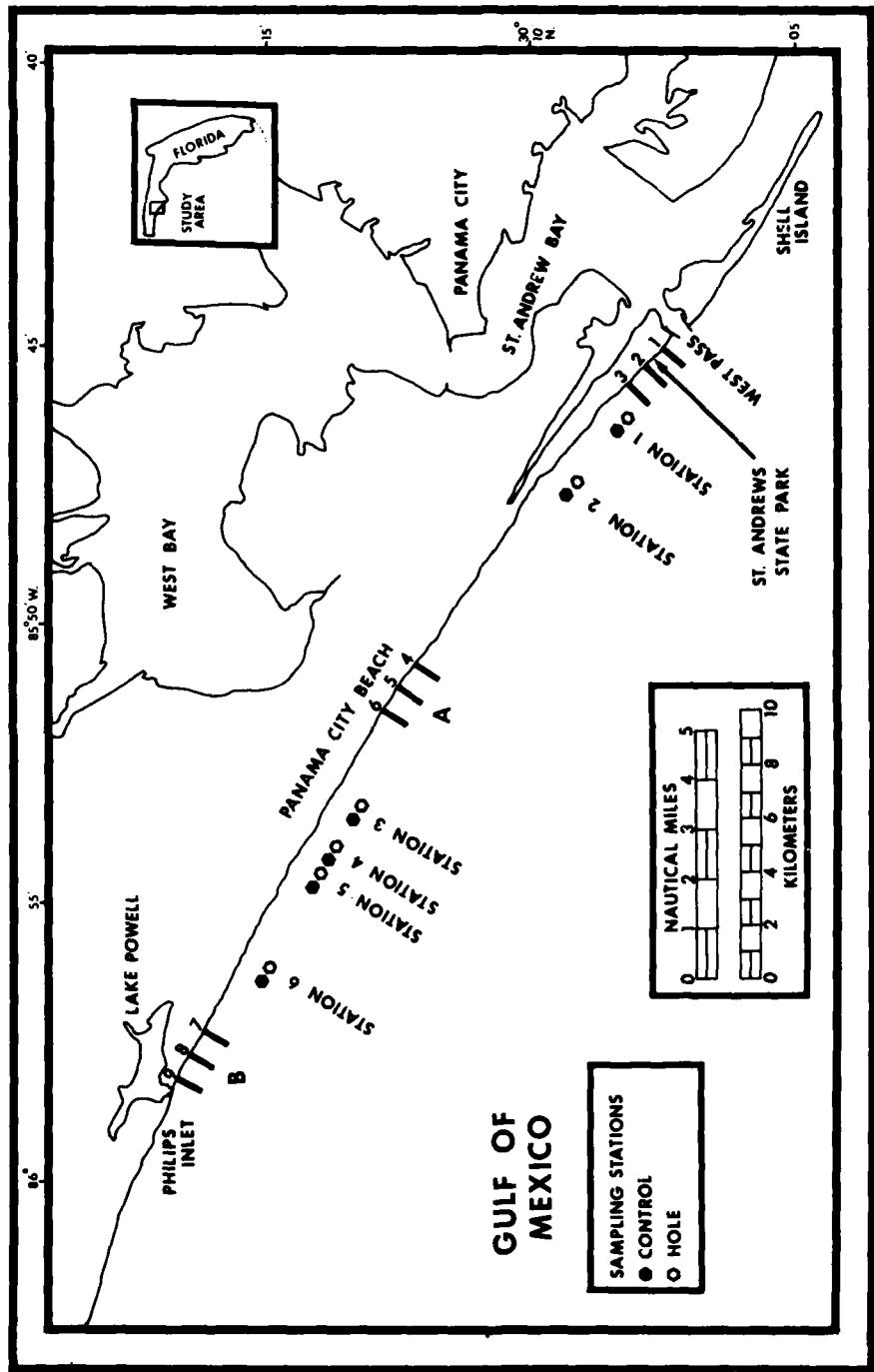


Figure 1. Study area at Panama City Beach, Florida, showing stations 1 to 6, July 1977.

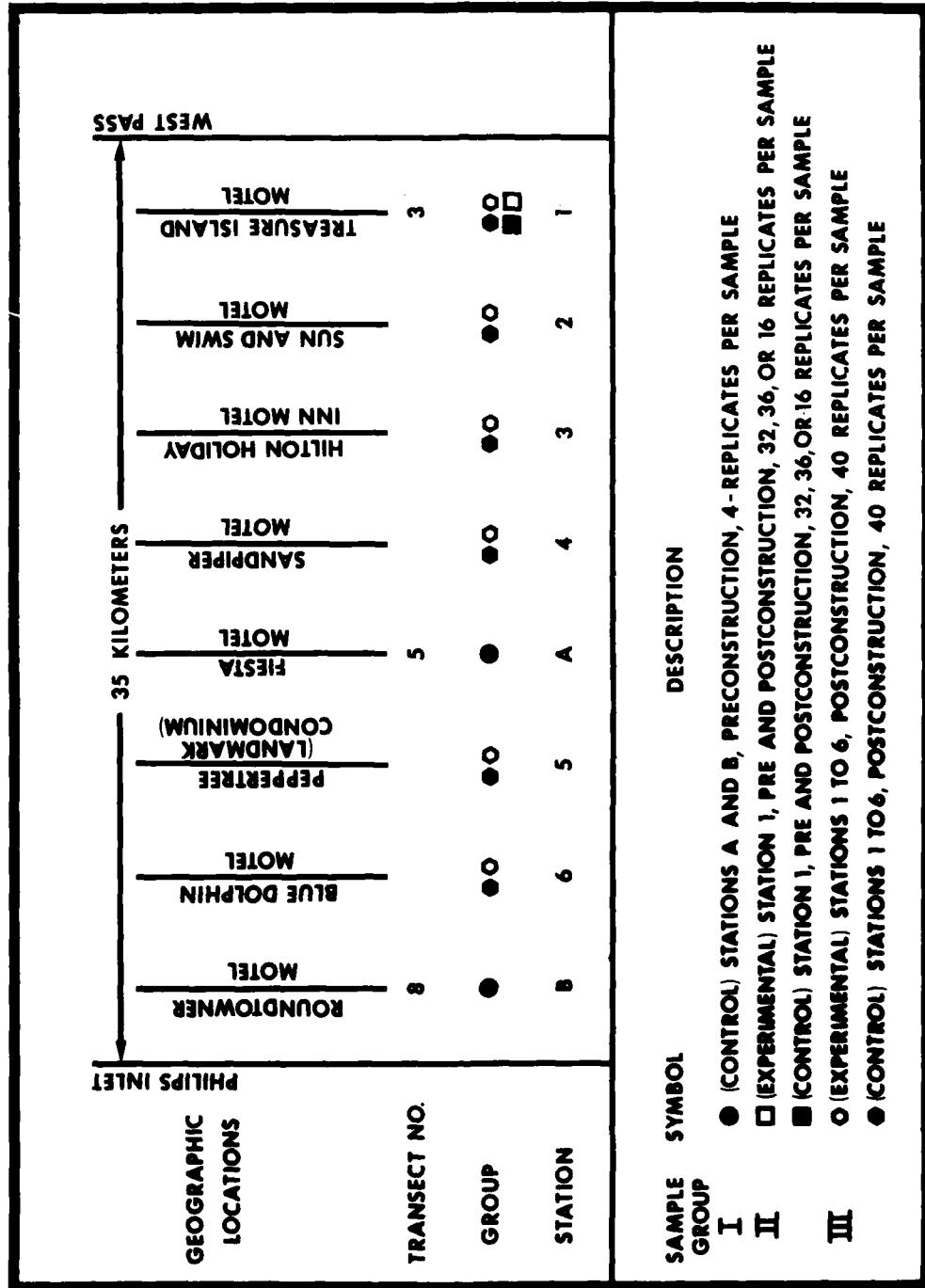


Figure 2. Schematic representation of sampling plan, Panama City, Florida.

The second group contains station 1 (Fig. 2), located seaward of Treasure Island Motel (near the eastern end of the study area), which had two collecting areas--one at the borrow site and the other a short distance away on undredged bottom. Samples were taken from the designated borrow site before dredging in April, June, and July 1976. Then 2 days after dredging (10 August 1976), concurrent sampling was started inside and outside the borrow pit. Sampling in both the pit (experimental samples) and adjacent to it (control samples) continued on a weekly schedule for 1 month. Samples were taken twice the next month, and then monthly thereafter until the study was concluded in November 1977. These samples were collected to record diversity and abundance of benthic fauna at a specific dredge site before dredging started, and then, over time, to compare population characteristics of control samples with experimental samples.

The third group includes stations 1, 2, 3, 4, 5, and 6 for one-time sampling only inside and outside borrow pits during July 1977--about 12 months after dredging (Fig. 2). The six stations were located seaward of the following landmarks: station 1, Treasure Island Motel; station 2, Sun and Swim Motel; station 3, Hilton Holiday Inn; station 4, Sandpiper Motel; station 5, Peppertree Condominium (now Landmark Condominium); and station 6, Blue Dolphin Motel. These collections provided a comparison of fauna in control and experimental samples from a number of borrow pits for an evaluation of short-term recovery within a period of 1 year. Throughout this report, samples from stations A and B, and preconstruction samples from station 1, are referred to as baseline or control samples; all other samples from outside borrow pits are called control samples, and all samples from within borrow pits are designated experimental samples.

IV. SAMPLING AND ANALYTICAL PROCEDURES

1. Hydrology.

Surface water temperature and salinity measurements were recorded in each sampling period at stations A and B, and on a monthly schedule over the duration of sampling at station 1. Temperature was taken using a hand-held, mercury bulb thermometer graduated in Celsius degrees. Salinity, in parts per thousand, was determined with a Goldberg temperature-compensated refractometer (American Optical Co., Model No. 10419).

2. Sedimentology.

Sediment samples were collected to determine textural features, statistical properties, and carbon chemistry. Textural parameters included weight percentages of granules, sand, and silt-clay. Mean grain size, standard deviation (as a measure of sorting), skewness, and kurtosis were calculated and interpreted according to the system described by Folk (1974). The carbon analyses included total carbon, total organic carbon, and total carbonate carbon.

Collections were limited to surface samples that included the upper 10 centimeters of sediment. Sediments were collected in standard 8-ounce, screw-cap jars; all samples were stored frozen prior to analyses. Detailed analytical methods are described by Saloman (1976).

For textural analyses, sediment samples were sieved at 1-phi intervals in nested screens placed on a mechanical shaker. Fraction weights were recorded to the closest milligram and tabulated as weight percentages. No hydrometer or pipette determinations were required because silt-clay percentages were quite low. Based on grain-size distribution curves, formulas introduced by Folk (1974) were used to calculate statistical properties. Carbon analyses were made using a Leco 750-100, 90-second carbon analyzer.

Additionally, divers recorded observations of sediment inside and outside the borrow pit at station 1. These observations were made on a regular basis during the first postconstruction collection, and in subsequent collections, until the study ended.

3. Benthos.

At all collecting points, infauna was sampled with a hand-operated plug sampler (box corer) that covered a surface area of 1/64 square meter and penetrated the bottom to a depth of 23 centimeters (Saloman, 1976). Replicate samples were taken at each site, but the number was not always the same for each of the three station groups. At stations A and B, four replicates composed a sample (preconstruction base-line study of 1974-75). At station 1, the first collection contained 32 replicates (19 April 1976), while second and third preconstruction samples each consisted of 36 replicates. After dredging, however, both control and experimental samples from station 1 each included 16 replicates. Finally, in the one-time collection at stations 1 to 6, 1 year after dredging, control and experimental samples were each composed of 40 replicates. The decision to take more than 4 replicates in most samples was somewhat arbitrary, since sampling to develop a species rarefaction curve showed that 4 plugs comprised an adequate qualitative and quantitative sample of the nearshore benthos (Saloman, 1976). For reference, a schematic representation of the overall sampling plan was prepared to show geographic relationships among stations within the study area, landmarks along the shore, pertinent transect locations from studies started in 1974, and the sampling locations of borrow pits and undredged bottom studied between April 1976 and July 1977 (Fig. 2).

All benthic samples were taken by scuba divers and sieved on shipboard in a 0.3-meter diameter screen of 0.7 millimeter mesh. Material remaining on the screen was preserved with 10-percent seawater formalin in standard 2-quart, screwcap jars. Rose bengal dye was added to the formalin to stain organisms and facilitate their subsequent separation from debris. In the laboratory,

each collection was resieved under tapwater and all specimens from respective samples were stored in 70-percent isopropanol for final sorting, taxonomic determinations, and species counts. The 0.7 millimeter screen was used instead of a conventional 0.5 millimeter one because the former facilitated sieving operations and retained a percentage of infauna that was shown to be very nearly equivalent to that sampled by the smaller mesh size.

As in Saloman's (1976) work, biological data presented here include a species checklist and individual station listings that show species occurrence and frequency, together with calculations for number of individuals per square meter and the Shannon-Weaver index of faunal diversity (H'). Also, as a measure of relative species dominance, equitability (J') was computed for each station (Pielou, 1975). Two other statistical procedures were also employed. The first, Morisita's Index (Morisita, 1959; Bloom, 1981), provided a numerical method of comparing faunal similarity between comparable sets of control and experimental samples, and was used to develop similarity matrices and classification diagrams that graphically show faunal relationships based on station data for diversity and abundance.

The second procedure, a stability analysis (Bloom, 1980), is a multivariate, nonparametric statistical and geometric procedure that converts biotic data from control and experimental samples into communities that can be represented mathematically. For one representation all base-line and control data were used to define numerical characteristics of a preconstruction community cluster that has a central point, or centroid, and certain specific spatial limits. In the first stability analysis, the distance from the centroid to control and experimental samples was used to determine variability among samples from undredged and dredged bottoms. In the second analysis, community clusters calculated for experimental samples were compared to the preconstruction cluster, in postconstruction sequence. When a boundary or an experimental cluster met the limit of the preconstruction cluster, faunal recovery was accepted. Experimental collections from station 1, where sampling over time was done, were the only borrow pit samples used in this analysis.

V. RESULTS

1. General.

The findings in this section are based on the detailed information given in Appendixes A to F. Appendix A lists abiotic parameters by station. Appendix B is a checklist of all organisms collected at offshore stations from November 1974 to November 1977. Appendix C contains all biological station data and indices of diversity (H') and equitability (J'). Appendix D (Similarity Matrices) and E (Classification Analyses and Dendograms) are both based on Morisita's index of faunal similarity. Appendix F is a graphic representation of the two stability analyses. The first graph shows comparative variability among control and experimental samples when compared with the centroid of a community cluster calculated from all base-line and control samples. The second

is a stability plot for experimental samples from station 1 showing the post-construction time lapse before faunal recovery appears evident.

2. Hydrology.

Water temperature and salinity data from the 1974-75 sampling at stations A and B were compared to data from station 1 sampled during similar months in 1976-77 (Table 1). Both sets of data show normal seasonal trends in water temperature, except for one abnormally low value of 9° Celsius recorded in February 1977.

Salinity was low at stations A and B in August 1975, but salinity during other months was 32 parts per thousand or higher, and similar to station 1 records (Table 1). Appreciable declines in salinity apparently coincide with periods of seasonally heavy rainfall.

3. Sedimentology.

The influence of dredging on sediment composition was determined by analyses of base-line and control samples, compared to samples taken from borrow pits. Base-line data came from seasonal sediment collections at stations A and B, and from those taken before dredging at station 1 in April, June, and July 1976. Control data were available from samples outside the borrow pit at station 1, and from samples collected in an undredged bottom at stations 1 to 6 in July 1977. Data from experimental samples also came from periodic collections at station 1, and from borrow pit collections in the single survey in July at stations 1 to 6.

Textural, statistical, and chemical properties of base-line samples (Table 2) were used to describe natural features of offshore sediments, since these samples were collected in all seasons prior to dredging at eastern, central, and western locations within the study area (see App. A).

a. Texture. Sediment composition was about 99-percent sand, and both granules and silt-clay size particles contributed less than 1 percent.

b. Statistical Properties. Values for mean grain size, standard deviation, skewness, and kurtosis classified these sediments as fine sand that is moderately well to well sorted, symmetrical to coarsely skewed, and leptokurtic (sorted better in the center than at the ends of grain size distribution curves).

c. Carbon Chemistry. Total carbon content of base-line samples was less than 0.30 percent. Carbonate carbon contributed somewhat more to this total than organic carbon, indicating that most carbon occurred in the form of shell fragments rather than as organic deposits.

For station 1, when these features were compared to control and experimental samples, noteworthy differences appeared only in experimental samples.

Table 1. Water temperature and salinity at stations A and B before the 1974-75 dredging, and at station 1 before and after the 1976 dredging for beach nourishment at Panama City Beach, Florida.

Station	Date	Water Temp. (°C)	Salinity (ppt)
<u>1974</u>			
A	18 Nov.	21.0	34.5
B	18 Nov.	20.8	34.3
<u>1975</u>			
A	20 Feb.	17.4	34.4
B	20 Feb.	17.5	33.9
A	20 May	26.2	32.2
B	20 May	26.0	32.2
A	12 Aug.	28.3	26.2
B	12 Aug.	28.5	26.1
<u>1976</u>			
(before)	Apr.	20.2	33.3
	May	20.2	34.9
	June	25.7	32.3
	July	28.0	33.3
	Aug.	27.0	35.3
	Sept.	27.8	32.6
	Oct.	24.9	33.1
	Nov.	18.0	33.2
	Dec.	12.5	34.1
<u>1977</u>			
(after)	Jan.	12.4	33.3
	Feb.	9.0	34.3
	Mar.	14.3	34.4
	Apr.	22.4	33.5
	May	21.8	34.3
	June	25.7	32.1
	July	27.5	33.6
	Aug.	29.0	35.3
	Sept.	27.7	32.6
	Oct.	25.0	33.1
	Nov.	-	-

Table 2. Textural and statistical properties of sediments in control (undredged bottom) and experimental (borrow pit) samples taken 1 year after dredging at stations 1 to 6 along the 9-meter depth contour off Panama City Beach, Florida, July 1977.

Station	Textural			Statistical			
	Granula (pet)	Sand (pet)	Silt-clay (pet)	Mean grain size (phi)	Std. dev. (phi)	Skewness	Kurtosis
1 Control	99.70	0.30		2.45	0.45	-0.19	1.18
Experimental	98.64	1.36		2.30	0.53	-0.00	1.39
2 Control	99.65	0.35		2.45	0.44	-0.18	1.15
Experimental	99.80	0.20		2.43	0.48	-0.19	1.21
3 Control	99.88	0.12		2.21	0.62	-0.32	1.11
Experimental	0.92	98.96	0.11	1.75	1.06	-0.46	0.82
4 Control	99.86	0.14		2.24	0.61	-0.31	1.16
Experimental	0.06	99.81	0.11	2.01	0.83	-0.41	0.95
5 Control	99.86	0.14		2.31	0.59	-0.33	1.34
Experimental	99.86	0.14		2.26	0.58	-0.28	1.11
6 Control	0.34	99.52	0.14	2.11	0.76	-0.40	1.09
Experimental	0.14	99.76	0.11	2.31	0.61	-0.34	1.39

The particle-size distribution of sand was below 99 percent in experimental samples from September, October, and November 1976, and from January, June, July, August, and September 1977. The lowest level (92 percent) was recorded in September 1976. Other low values were only in the 97- to 98-percent range. Granule-size particles were consistently under 1 percent, but 11 experimental samples contained more than 0.30-percent silt-clay. The highest value for the silt-clay fraction was 8.1 percent in a sample collected on 21 September 1976. Values of more than 1-percent silt-clay were also recorded in another September sample as well as in October and November 1976, and again in January, June, July, August, and September 1977.

Mean grain size for experimental samples did not range below fine sand. Sorting categories changed for two experimental samples. In the September 1976 sample, sorting was only moderate; in the May 1977 sample, it proved to be extremely poor. For skewness, five experimental samples exhibited an uncharacteristic trend that placed them in classifications of fine skewed to strongly fine skewed. The single sample classified as strongly fine skewed was obtained in September 1976; the others were collected in September and October 1976, and August and September 1977. Deviation from the normal leptokurtic condition was recorded for five experimental samples. Values corresponding to mesokurtic were recorded in August 1976, and April and May 1977. Values in the very leptokurtic range were recorded in January and June 1977.

A carbon content percentage greater than the base-line average was recorded in 12 experimental samples; however, this number of samples may be low since no carbon analyses were made after the June 1977 sampling. The highest recorded value was 2.32 percent for the September 1976 sample. Other slightly elevated values ranged between 0.31 and 1.21 percent. Among these 12 samples, the proportion of organic carbon to carbonate carbon was higher for carbonate in 6 samples, higher for organic in 5, and in 1, the ratio was nearly even.

Sediment data for control and experimental samples collected at the six stations in July 1977 has been tabulated for comparison (Table 2). These analyses include only textural and statistical properties; no information on carbon chemistry was available.

At the six stations, granule-size particles were present in only four samples, and three of these came from borrow pits at stations 3, 4, and 6. The single control sample containing granules also came from station 6, and the overall granule distribution was under 1 percent. Sand content was about 99 percent in all collections. For the silt-clay fraction, only one value was considered abnormally high and that was recorded for the experimental sample from station 1 (1.36 percent).

With the one exception of medium sand (station 3, experimental), all samples fell into the classification of fine sand. Calculations for sorting showed that 9 of 12 samples were well to moderately well sorted. Other classifications included moderately sorted (station 4, experimental and station 6, control) and

poorly sorted (station 3, experimental). Skewness values were characteristic for five samples (symmetrical to coarsely skewed), and the other seven samples fit the strongly coarse-skewed classification and were about equally divided between the control and experimental samples. The normal, or leptokurtic condition, was found in nine samples. Of the remaining three, the experimental sample from station 4 and the control sample from station 6 were mesokurtic, while the experimental sample from station 3 was platykurtic.

Although sedimentological conditions in some experimental samples varied from the base-line criteria until late 1977, large variations were confined to borrow pit sediments at station 1 within 2 months after dredging. During that period, properties which may have been limiting to benthos were high silt-clay and organic carbon content.

Diver reports between 18 August (10 days after dredging) and 4 October 1976, stated that the station 1 borrow pit was 3 to 5 meters deep and had very dark surface sediments of an extremely soft, silty texture. Initially no surface signs of benthic life (burrows, mounds, or trails) were reported. Within the next month, sediments had become firmer and sandier; signs of infauna activity were conspicuous, crabs and other epibenthos were numerous, and a variety of fishes was observed. After 12 months, and on the last dive at station 1 in November 1977, divers concluded that borrow pits had filled to within a meter of surrounding bottom, and that sediments inside were still finer, darker, and less compact than sediments outside, but marine life appeared similar in control and experimental areas.

4. Benthos.

The checklist of organisms in Appendix B contains about 362 organisms at the species level, representing 14 invertebrate phyla and the vertebrate class, Osteichthyes (bony fishes). Of this number, Annelida had 152 species (42 percent), Arthropoda had 108 (30 percent), and there were 69 mollusks (19 percent). The remaining 33 species (9 percent) were divided among 11 groups: Cnidaria, Platyhelminthes, Nemertinea, Nematoda, Phoronida, Brachiopoda, Sipunculida, Echiurida, Echinodermata, Hemichordata, and Cephalochordata.

Species counts from each station showed a total of 58,068 individuals collected. On a percentage basis, more than half were annelids (55 percent), 19 percent were mollusks, 18 percent were arthropods, Cnidaria and Cephalochordata each accounted for 2 percent, Nematoda and Echinodermata both had 1 percent, and the other seven groups contained 2 percent, collectively. For the three major phyla, species that were numerically dominant in one or more of the base-line or control site collections are given in Table 3.

All station data for richness, quantitative abundance, diversity (H'), and equitability (J') were tabulated by base-line, control, and experimental sample categories (Tables 4, 5, and 6). Graphic analyses of Morisita's Index and stability are given in Appendixes D, E, and F.

Table 3. Species in dominant phyla (listed alphabetically) that were numerically abundant at one or more base-line or control stations offshore Panama City Beach, Florida, November 1974 to November 1977.

MOLLUSCA			
<i>Acteocina candei</i>		<i>Neotoma pusilla</i>	
<i>Cyllichnella bidentata</i>		<i>Periploma margaritaceum</i>	
<i>Diastoma varium</i>		<i>Pitar simpsoni</i>	
<i>Ervilia concentrica</i>		<i>Strigilla mirabilis</i>	
<i>Lepton</i> sp.		<i>Tellina texana</i>	
<i>Lucina multilineata</i>		<i>Tellina versicolor</i>	
ANNELIDA			
<i>Armandia agilis</i>		<i>Nephtys bucera</i>	
<i>Armandia maculata</i>		<i>Nephtys picta</i>	
<i>Bronia wellfleeteensis</i>		<i>Onuphis eremita oculata</i>	
<i>Ceratonereis irritabilis</i>		<i>Onuphis nebulosa</i>	
<i>Chone</i> sp.		<i>Owenia fusiformis</i>	
<i>Dioplo uncinata</i>		<i>Paranides lyra</i>	
<i>Eteone lactea</i>		<i>Paranoides fulgens</i>	
<i>Glycera americana</i>		<i>Parapriionospio pinnata</i>	
<i>Goniada littorea</i>		<i>Prionospio crista</i>	
<i>Haploscoloplos foliaceus</i>		<i>Rullierinereis mexicana</i>	
<i>Lumbrineris cruzensis</i>		<i>Scoloplos texana</i>	
<i>Lumbrineris tenuis</i>		<i>Scoloplos armiger</i>	
<i>Lumbrineris tenuirostris</i>		<i>Spiro pectiniferae</i>	
<i>Magestoma riojai</i>		<i>Spiophaness bombyx</i>	
<i>Magestoma</i> sp.		Unidentified Oligochaete	
<i>Mesochaeopterus</i> sp. var. <i>latus</i>			
ARTHROPODA			
<i>Acanthohaustorius</i> sp.		<i>Monoculodes</i> sp.	
<i>Albunea parietii</i>		<i>Oxyurostylis smithi</i>	
<i>Ampelisca abdita</i>		<i>Processa hemphilli</i>	
<i>Ampelisca verrilli</i>		<i>Protohaustorius</i> sp.	
<i>Cyclospis varians</i>		<i>Pseudohaustorius</i> sp.	
<i>Cyclospis</i> sp.		<i>Pseudoplatyischnopus</i> sp.	
<i>Erichthonius</i> sp.		<i>Synchelidium</i> sp.	
<i>Lepidactylus</i> sp.		Unidentified Ostracod	

Table 4. Species richness, abundance, diversity (H'), and equitability (J') and base-line stations offshore Panama City Beach, Florida, November 1974 to July 1976.

Station	Date	Replicates per sample (No.)	Species (No.)	Individuals per m^2 (No.)	H'	J'
A	Nov. 1974	4	15	2,064	1.9	0.7
	Feb. 1975		27	3,008	2.2	0.7
	May 1975		41	4,784	2.8	0.8
	Aug. 1975		43	3,888	3.1	0.8
Avg.			32	3,436	2.5	0.8
Range			15 to 43	2,064 to 4,784	1.9 to 3.1	0.7 to 0.8
B	Nov. 1974	4	27	3,808	1.9	0.6
	Feb. 1975		26	3,984	2.3	0.7
	May 1975		28	5,344	2.3	0.7
	Aug. 1975		47	5,248	3.0	0.8
Avg.			32	4,596	2.4	0.7
Range			26 to 47	3,808 to 5,344	1.9 to 3.0	0.6 to 0.8
1	Apr. 1976	32	67	1,506	2.5	0.6
	June 1976	36	94	1,902	3.5	0.8
	July 1976	36	120	7,178	3.1	0.6
Avg.			94	3,529	3.0	0.7
Range			67 to 120	1,506 to 7,178	2.5 to 3.5	0.6 to 0.8
Overall						
Avg.			49	3,883	2.6	0.7
Range			15 to 120	1,506 to 7,178	1.9 to 3.5	0.6 to 0.8

Table 5. Species richness, abundance, diversity (H'), and equitability (J') at control stations offshore Panama City Beach, Florida, August 1976 to November 1977.

Station	Date	Replicates per sample (No.)	Species (No.)	Individuals per m^2 (No.)	H'	J'
1	10 Aug. 1976	16	72	5,576	2.4	0.6
	18 Aug. 1976		80	5,500	2.8	0.6
	24 Aug. 1976		84	4,836	2.9	0.6
	1 Sept. 1976		74	3,080	2.9	0.7
	8 Sept. 1976		83	2,260	3.4	0.8
	21 Sept. 1976		89	3,128	3.0	0.7
	4 Oct. 1976		87	3,116	3.3	0.7
	18 Oct. 1976		77	3,912	2.6	0.6
	1 Nov. 1976		67	3,020	2.6	0.6
	1 Dec. 1976		74	3,080	3.0	0.7
	5 Jan. 1977		56	1,724	3.0	0.8
	2 Feb. 1977		53	1,516	3.1	0.8
	1 Mar. 1977		64	2,360	3.1	0.7
	1 Apr. 1977		57	2,632	3.1	0.8
	2 May 1977		55	2,572	2.7	0.7
	1 June 1977		55	1,976	3.3	0.8
	5 July 1977		64	3,264	3.1	0.7
	2 Aug. 1977		80	5,168	3.0	0.7
	1 Sept. 1977		70	3,572	2.9	0.7
	3 Oct. 1977		64	2,112	2.8	0.7
	1 Nov. 1977		72	2,904	3.0	0.7
<u>Avg.</u> <u>Range</u>		70	3,205	3.0	0.7	
		53 to 89	1,515 to 5,576	2.4 to 3.3	0.6 to 0.8	
1	11 Jul. 1977	40	99	3,365	3.2	0.7
2	15 Jul. 1977	40	112	3,750	3.4	0.7
3	25 Jul. 1977	40	105	4,326	3.2	0.7
4	26 Jul. 1977	40	74	4,050	2.9	0.7
5	27 Jul. 1977	40	57	1,408	3.0	0.7
6	28 Jul. 1977	40	66	2,483	3.0	0.7
<u>Avg.</u> <u>Range</u>		86	2,817	3.1	0.7	
		57 to 112	1,408 to 4,326	2.9 to 3.4	0.6 to 0.8	
<u>Overall</u> <u>Avg.</u> <u>Range</u>		74	3,119	3.0	0.7	
		53 to 112	1,408 to 5,576	2.4 to 3.4	0.6 to 0.8	

Table 6. Species richness, abundance, diversity (H'), and equitability (J') at experimental stations offshore Panama City Beach, Florida, August 1976 to November 1977.

Station	Date	Replicates per sample (No.)	Species (No.)	Individuals per m^2 (No.)	H'	J'
1	10 Aug. 1976	16	20	324	2.0	0.7
	18 Aug. 1976		38	976	2.2	0.6
	24 Aug. 1976		60	2,136	2.6	0.6
	1 Sept. 1976		38	1,612	2.1	0.6
	8 Sept. 1976		47	1,344	2.7	0.7
	21 Sept. 1976		45	924	2.9	0.8
	4 Oct. 1976		85	2,440	3.7	0.8
	18 Oct. 1976		46	1,124	2.9	0.8
	1 Nov. 1976		55	2,044	2.5	0.6
	1 Dec. 1976		54	3,540	2.3	0.6
	5 Jan. 1977		36	2,192	1.8	0.5
	2 Feb. 1977		44	2,212	1.9	0.5
	1 Mar. 1977		62	3,732	2.6	0.6
	1 Apr. 1977		52	3,144	2.2	0.6
	2 May 1977		54	1,656	2.8	0.7
	1 June 1977		69	3,256	3.2	0.8
	5 July 1977		49	1,964	2.7	0.7
	2 Aug. 1977		70	2,920	3.2	0.8
	1 Sept. 1977		32	440	2.9	0.8
	3 Oct. 1977		61	1,586	3.1	0.8
	1 Nov. 1977		54	1,220	2.9	0.7
<u>Avg.</u>			51	1,942	2.6	0.7
<u>Range</u>			20 to 85	324 to 3,732	1.8 to 3.7	0.5 to 0.8
1	11 July 1977	40	81	2,422	2.9	0.7
2	15 July 1977	40	114	3,862	3.5	0.7
3	25 July 1977	40	98	4,037	3.3	0.7
4	26 July 1977	40	94	2,587	3.4	0.8
5	27 July 1977	40	80	2,644	2.9	0.7
6	28 July 1977	40	83	3,034	3.4	0.8
<u>Avg.</u>			92	3,101	3.2	0.7
<u>Range</u>			80 to 114	2,422 to 4,037	2.9 to 3.5	0.7 to 0.8
<u>Overall</u>						
<u>Avg.</u>			60	2,200	2.8	0.7
<u>Range</u>			20 to 114	324 to 4,037	1.8 to 3.7	0.5 to 0.8

a. Richness. The data from base-line and control samples indicate that species richness followed an irregular seasonal pattern. Generally, numbers of species were lowest in a period between late fall and spring, and showed one or more peaks sometime between midsummer and late fall.

For base-line collections (Table 4), the number of species per sample averaged 49 and ranged between 15 (November) and 120 (July). The average for control samples was 74 and ranged between 53 (February) and 112 (July). Intermediate values were recorded for experimental samples. In these collections, average number of species per sample was 60; the low, which was only 20, occurred in the first collection after dredging; the high was 114, recorded in July 1 year later.

On a date-to-date comparison at station 1 and stations 1 to 6, richness data for control and experimental samples (Tables 5 and 6) gave somewhat conflicting results. For time-sequence samples at station 1, richness data showed incomplete borrow pit recovery as numbers of species prove to be consistently higher for controls on every occasion except 1 June 1977. This was reflected in the average of 70 and the range between 53 and 89 for control samples, as opposed to an average of 51 and a range of 20 to 85 for experimental samples. Even so, a degree of recovery was evident at station 1 a few weeks after dredging, and richness data for control and experimental samples first approximated one another by October 1976. Species recorded in the early stages of recovery at station 1 are of special interest because they include survivors, migrants, and perhaps the first recruits (Table 7).

Contrary to indications of the incomplete recovery discussed above, results for richness in the one-time sampling at stations 1 to 6 showed that borrow pits generally supported more species than undredged bottom at 1 year. This was true for stations 2, 4, 5, and 6. Findings at station 1 were contradictory, and at station 3, species in experimental collections were outnumbered by those in control collections. The number of species in control samples averaged 86 and ranged between 57 and 112; the number for experimental samples was higher with an average of 92 and a range between 80 and 114.

Even though richness data are somewhat inconsistent, overall they indicate that faunal recovery began rapidly and was virtually complete throughout the study area in about 1 year. Data from the one-time sampling at six stations support this statement to a greater degree than those from regular time-sequence samples at station 1.

b. Abundance. Except for a few anomalies, seasonal cycles of faunal abundance coincided with periods of low and high species diversity, i.e., fewer animals were recorded in winter collections, and peak numbers generally occurred at various times between March and December. In base-line samples, numbers of individuals per square meter of bottom averaged 3,883 and ranged from 1,506 (April) to 7,178 (July). The average for control samples was 3,119, with a range between 1,408 (July) and 5,576 (August). Experimental samples had an

Table 7. Species and their frequency of occurrence in the first 3 weeks after dredging at station 1 offshore Panama City Beach, Florida, August 1976.

Species	No. of individuals (by date)	No. of individuals (by date)		
		10 Aug.	18 Aug.	24 Aug.
ANNELIDA (Cont'd)				
<i>PLATYHELMINTHES</i>	1	1	43	114
<i>UNID. sp.</i>				1
<i>NEUROCTENIDA</i>	1	2	5	7
<i>UNID. sp.</i>				1
<i>NEUROPODA</i>	2	3	9	19
<i>UNID. sp.</i>				1
<i>BRACHIOPODA</i>	1	1	1	1
<i>Glyptida pyrenaidea</i>				1
ARTHROPODA				
<i>ACARINA</i>	1	1	1	1
<i>Acarinotarsus sp.</i>				1
<i>COLEOPTERA</i>	1	4	1	27
<i>Amphicnus obdita</i>				1
<i>DIPTERA</i>	1	1	1	1
<i>Monoculodes sp.</i>				1
<i>ISOPODA</i>	4	4	4	31
<i>Protohaustorius sp.</i>				1
<i>NAUCORIDA</i>	1	1	1	1
<i>Pseudoplatustechnopus sp.</i>				1
<i>NEUROPTERA</i>	1	1	1	1
<i>Synchlaidium sp.</i>				1
<i>PTEROPODA</i>	1	1	1	1
<i>Alburna parvifl.</i>				1
<i>ROSTRACEA</i>	1	1	1	1
<i>Callianassa jacchiae</i>				1
<i>SCORPIONIDA</i>	3	23	3	1
<i>Petrochirus diogenes</i>				1
<i>SPONGIA</i>	2	9	1	1
<i>Petrosilis galanthus</i>				1
<i>SYSTERIIDA</i>	3	1	1	1
<i>Pinnixa retinax</i>				1
<i>TRILOPODIDA</i>	1	1	1	1
<i>Procesa vicina</i>				1
<i>VERMIFORMIA</i>	1	1	1	1
<i>Cycloaspis sp.</i>				1
<i>VERMICELIDA</i>	12	18	23	6
<i>Stygilla nitida</i>				1
<i>VERMICELLOIDA</i>	2	2	2	6
<i>Tellina testana</i>				1
<i>VERMICELLOPODA</i>	12	18	23	6
<i>Tellina vermicular</i>				1
<i>VERMICELLOPSIDA</i>	1	1	1	1
<i>Oligochaeta</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Apertionoaspis pygmaea</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Armatella maculata</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Branca wellsiensis</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Copitellidae lonesi</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Caudellida sp.</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Corononema irritabile</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Despaxia caprea</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Rissoa lactea</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Rissoa sanguinea</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Glycera americana</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Glycera dibranchista</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Glycere sp.</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Glycinde solitaria</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Gonioda histonea</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Cypris vitrea</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	1	1
<i>Haplocoelus foliosus</i>				1
<i>VERMICELLOPSIDAE</i>	38	113	170	6
<i>Lambertia crassula</i>				1
<i>VERMICELLOPSIDAE</i>	4	4	4	6
<i>Macochaetopterus sagittarius</i>				1
<i>VERMICELLOPSIDAE</i>	3	3	13	1
<i>Naphya picta</i>				1
<i>VERMICELLOPSIDAE</i>	1	1	3	11
<i>Onuphis e. eudoxa</i>				1
<i>VERMICELLOPSIDAE</i>	2	2	2	1
<i>Paracardia tyana</i>				1
<i>VERMICELLOPSIDAE</i>	2	2	2	1
<i>Paraplanaxis pinnata</i>				1
<i>VERMICELLOPSIDAE</i>	2	2	2	1
<i>Phyllocoelus armata</i>				1
TOTAL SPECIES/INDIVIDUALS				
	26/81	38/24	60/534	

average of 2,200, with a range between 324 (immediately after dredging), and 4,037 1 year following dredging.

Results of periodic sampling at station 1 showed that numbers of individuals within the borrow pit first reached control sample abundance in December 1976, or about 3 months after dredging had been completed. From that time through the next four sampling periods, individuals in experimental samples were more numerous than in control samples. In May, abundance values were reversed, then again favored the experimental sample in June but remained higher in controls until collecting terminated in November 1977. Thus, a pattern of abundance indicative of faunal recovery within 3 months did not occur the following summer and fall seasons.

At stations 1 to 6, one-time sampling in July neither confirmed nor refuted evidence of recovery from time-sequence sampling at station 1. Numbers of individuals were higher in control samples at stations 1, 3, and 4, while abundance values were higher in experimental samples at stations 2, 5, and 6. A comparison of averages and ranges showed that the average number of individuals per square meter was higher for experimental samples. The low for experimental collections was well above that of control samples, and the high for experimental samples was comparable to the high for control samples. In summary, abundance values demonstrated rapid initial faunal recovery in the borrow pits that was practically complete after about 12 months.

c. Diversity (H') and Equitability (J'). For comparable pairs of control and experimental samples, species richness and abundance data were converted statistically to provide an index of diversity (H') that was used to numerically determine degrees of difference between faunal communities in undredged bottom and borrow pits. Observed differences were validated for each sample set by calculating equitability (J'), which is a mathematical measurement of how evenly organisms in a sample are divided among the various species represented (Pielou, 1975). Used in combination, values of H' and J' for base-line and control samples were regarded normal. For experimental samples, lesser values of H' and J' were attributed to dredging effects, and equal or higher values were considered evidence of faunal recovery. In base-line samples, values for both parameters were slightly higher in summer months, but control samples at station 1 showed no seasonal trend.

Average values for H' and J' in base-line samples were 2.6 and 0.7 respectively, with H' ranging from 1.9 to 3.5 and J' ranging from 0.6 to 0.8. Average H' in control samples was a little higher than base-line but J' was the same and ranges of both were within base-line limits. Among experimental collections, average H' was 2.8 and ranged between 1.8 and 3.7. The average for J' was the same as for base-line and control samples, but the low was 0.5 and the high was 0.8. Lowest values for H' and J' were recorded in January and February, and may have been a result of low water temperature as well as dredging.

When H' and J' values for control and experimental samples taken on the same data were compared, the results showed little regularity. In the series from

station 1, the first experimental sample to equal or surpass control values of H' and J' was collected in October, about 2 months after dredging. From that time until November of the next year, only 5 of 14 experimental samples showed evidence of faunal recovery. Recovery was demonstrated somewhat better by H' and J' data from the six stations sampled in July 1977. At four borrow pit stations, experimental samples had the same or higher diversity and equitability values than control samples. Also, average H' for experimental samples was higher than that for control samples, and averages of J' were the same inside and outside borrow pits.

A review of diversity and equitability results suggests the following: (1) the benthos off Panama City Beach exhibited an annual cycle in which species diversity and abundance were greater in warm water months than in winter; (2) faunal recovery in the borrow pit at station 1 was evident to a considerable degree within 2 to 3 months after dredging, and became nearly complete by the end of sampling in November 1977; and (3) faunal recovery also occurred within 1 year of dredging in at least half of the six borrow pits sampled. To further test these inferences, sets of biotic data from control and experimental samples were evaluated using Morisita's index of faunal similarity and stability analyses. Morisita's index was first used to develop similarity matrices (App. D), and then to perform a classification analysis that arranged control and experimental samples in the form of a dendrogram according to their various degrees of likeness (App. E). Two stability analyses were made (App. F). The first shows the amount of sample variation among the control and experimental samples when compared to the centroid of the statistical faunal cluster calculated from all base-line and control data. The second shows time to faunal recovery by plotting experimental sample data against the nearest mathematical edge of the same statistical cluster.

d. Morisita's Index. Similarity matrices were calculated and displayed for time-sequence samples from station 1, and for one-time collections at stations 1 to 6 (App. D). A regular pattern of light cells (no similarity) and dark cells (high similarity) was not evident because 45 percent or more of station-to-station comparisons in both values had faunal overlap of at least 50 percent. For additional clarification, the same data were used to generate a classification analysis for presentation as a cluster diagram (App. E). In performing the necessary calculations, a Q-mode (normal) analysis was made to show faunal relationships on a station-to-station basis; no data transformations were made because doing so would obscure the dominant ranking of any faunal elements in the samples; and group averaging was selected as the sorting strategy.

For time-sequence samples, the first five (1 September 1977-experimental to 10 August 1976-experimental) show very little similarity to any other samples and were therefore considered unrelated, or outliers. These outliers include two summer-fall experimental samples taken 1 year after dredging, two similar winter collections taken about 6 months after dredging, and the first experimental sample taken a few days after the dredging. The interpretation here is that the two experimental samples 1 year after dredging are as unrelated to other samples

as the one taken immediately after dredging and the two taken in winter during the presumed period of least faunal diversity and abundance.

The next group is the first cluster and has five samples (1 April 1977-experimental to 2 May 1977-experimental). These are related by season (spring), and consist of a base-line sample and control and experimental samples collected 8 to 9 months after dredging. This mixture, and close correspondence between control and experimental samples suggests that community recovery has occurred within the borrow pit at station 1.

Then there is a single, odd sample with no close associates (1 November 1977-experimental), followed by the second cluster which contains eight samples (4 October 1976-experimental to 3 October 1977-experimental). Except for the two control samples, this group represents the experimental samples in the fall during the first 3 months after dredging.

Cluster three is considered the opposite of cluster two. It has seven samples (10 August 1976-control to 2 August 1977-control); five are post-dredging late summer and fall control samples; one a preconstruction control sample from July; and one a winter experimental sample.

Cluster four is the largest grouping and contains the next 15 samples (1 September 1977-control to 1 November 1977-control); 8 of these are fall control samples and closely associated with experimental samples taken as soon as 2 weeks after dredging, as well as in various other months. Here, the indication is that recovery at station 1 began very quickly after dredging.

The fifth and last cluster contains six samples (1 June 1977-control to 11 July 1977-experimental), which are equally divided among summer control and experimental samples taken about 1 year after dredging. Similarities between clusters one and five provide substantial evidence of faunal recovery over a postconstruction period of 8 to 11 months.

For the one-time sampling at six stations, control and experimental collections all show a high level of faunal affinity and therefore support cluster data from station 1 showing a recovery time of 1 year or less. At the time these samples were taken, the diagram shows that station location east to west along the coast was a greater clustering factor than whether or not a sample came from a dredged or undredged bottom. This is not surprising considering the daily discharge of estuarine water through West Pass and into nearshore waters at the eastern end of the study area.

e. Stability Analyses. In the first analysis, control and experimental samples are represented along the x-axis according to the number of days before and after dredging (see App. F). The y-axis is a scale of increasing distance from a statistically determined centroid, or midpoint within a community cluster represented mathematically and calculated from all available base-line and

control data. This graph shows a large variation occurring in control and experimental samples, and at corresponding times, both appear about equally distant from the centroid--distance to maximum community stability. In other words, control samples did not show close connections to the centroid, nor did they follow a seasonal or any other discernible pattern in relation to that point. Likewise, experimental samples showed no definite postconstruction deviation from the centroid, and followed no subsequent trend that might have indicated recovery. In fact, when respective sample distances from the centroid were compared in a Mann-Whitney U-Test, it was found that variations among control and experimental samples were statistically indistinguishable. The point emphasized by this analysis is that faunal variation was a major feature of both control and experimental samples.

In the second graph, the y-axis scale (labeled distance to cluster edge) refers to the edge of the statistical community (to a 95-percent confidence level) that has the centroid as its midpoint (App. F). The zero point on the scale represents the nearest edge of the community, higher positive values are increasing distances from the edge, and negative values show that the experimental sample falls inside the cluster about the centroid and cannot be statistically separated from it. Experimental samples along the x-axis are arranged by day number in postdredging sequence. The x-y plots show that an experimental sample first touched the edge of the centroid cluster on day 332 (5 July 1977), about 11 months after dredging was completed at station 1. This intersection of an experimental sample with the zero line represents time to faunal recovery. However, in several later samples, the plot again falls outside the cluster edge, and does not return until October, 14 months after dredging and 1 month before sampling ended. This situation may be due to normal sample variation.

VI. CONCLUSIONS AND DISCUSSION

Study results indicate several general conclusions related to hydrology, sediments, and benthic fauna of borrow pits and undredged adjacent bottom. Hydrological measurements included temperature and salinity, recorded quarterly at stations A and B in 1974 and 1975, and monthly at station 1 during a 20-month period between April 1976 and November 1977. Temperature data showed that regular seasonal changes are subject to rather wide year-to-year variations. Summer temperature was the most consistent, but in spring, fall, and winter, observed yearly differences were on the order of 10° Celsius. In part, fluctuations of this magnitude could conceivably mediate events responsible for changes in benthic diversity and abundance recorded in base-line, control, and experimental samples.

Salinity was characteristically high (above 32 parts per thousand); however, a low value of 26 parts per thousand, recorded in August 1975, showed that the study area may at times be influenced by estuarine water masses from St. Andrew Bay and perhaps other areas as well (Salsman and Ciesluk, 1978). As with temperature, such periodic change could be translated into adjustments in community structure. In the case of salinity, however, the effects might be

more than physiological, as foreign water masses would undoubtedly introduce a variety of immigrant organisms and potential community recruits.

A comparison of sediments from undredged bottom and borrow pits showed that most deviations from normal properties appeared in experimental samples. Major sedimentological differences could be identified due to accumulation of loosely packed, darker, and siltier sediments in the pits shortly after dredging. These distinctions became more subtle with time, and by the following year, the surface samples (in nearly filled pits) were very similar to sediments on the adjacent undisturbed sea floor. When compared to base-line samples, specific differences included the following: (1) lower sand content, (2) higher silt-clay content, (3) poorer sorting, (4) more finely skewed, (5) more variation in both directions from a leptokurtic condition, and (6) higher content of organic carbon.

In the borrow pit at station 1, altered sediment texture was confirmed by divers, and bathymetric changes were recorded over time. Depth of the cut was 3 to 5 meters below the sea floor, and sediment at the bottom initially appeared dark, soft, and silty. Within a few months this material was covered by fine sand. By the end of sampling in November 1977, the pit had filled to within a meter of the surrounding bottom. A final visual impression was that sediments were still finer and darker, but no distinction could be made between epibenthic and pelagic marine life inside and outside the borrow pit.

Dredging caused an immediate decline in the bottom community followed by a rapid postconstruction recovery that was virtually complete after 1 year. This, or even a shorter recovery period of 8 to 9 months, was supported by analyses that included: (1) species richness, (2) abundance of individuals, (3) diversity and equitability indexes, (4) Morisita's index of faunal similarity, and (5) stability analyses. It is important to again note that sampling beyond 1 year indicated lack of complete faunal recovery. This may be true, or these samples may merely be representative of large natural environmental variations that were shown to be an inherent characteristic of the shallow coastal system off Panama City Beach.

On the basis of data presented here, and complementary studies by Saloman (1976) and Culter and Mahadevan (1982), it is evident that dredging done at Panama City Beach has had no adverse long-term effect on bottom dwelling invertebrates, sediments, or water quality either along the shore or in offshore borrow areas. Short-term ecological consequences of dredging were shown to last only about 1 year, and included only minor sedimentological changes and only a small decline in diversity and abundance among bottom dwelling invertebrates. This lack of evident protracted environmental alteration is due to factors related to physical and biological oceanography within the dredging and disposal areas, and to certain engineering features of the beach restoration project. The natural factors would include the following regional characteristics: (1) moderate to high wave energy capable of eroding and transporting large volumes of sediment annually, (2) tidal, longshore, offshore, and storm generated currents that have

the same, or greater, capability of transporting nearshore sediments, (3) a geographic location that is regularly influenced by water masses and marine life of estuarine, coastal, and oceanic origins, (4) a native infauna that is diversified, abundant, and well adapted to substrate disruption and movement, and (5) a fauna that is composed of subtropical and temperate species whose active reproductive periods are limited by low water temperatures normally recorded in only 1 or 2 winter months.

As for features of the dredging project, numerous small borrow areas were used, instead of fewer larger ones, and they were dredged only to a depth of about 5 meters or less. At this level, no strata of silt, clay, or rock were uncovered so that sediment type in dredged areas remained very much like sediment in undredged areas. Also, dredging occurred in fairly shallow water where sediment transport supplied the volume of sand required to rapidly fill the borrow pits. In this connection, it is important to mention that because of their fast filling rate, and the normally low concentration of suspended solids in overlying water, no biologically detrimental quantities of silt and clay size particles accumulated in borrow areas off Panama City Beach. If anything, during the recovery period, data support the theory that within borrow pits a relative decrease in turbulence and a slight increase in organic deposits may have been responsible for figures showing a higher diversity and abundance of infauna in some dredged areas compared to figures for bottom left undisturbed.

In general, results of coastal restoration studies at Panama City Beach agree with findings for similar projects in comparable surroundings (Thompson, 1973), and along with more recent work (Turberville and Marsh, 1982), provide additional information that can be used both locally and elsewhere to more accurately predict and evaluate environmental effects of beach nourishment operations. Nevertheless, since each coastal and estuarine area has certain unique features, it is important to continue a close association between ecological research and coastal engineering. Ideally, the research should be conducted to collect base-line data, proceed during all phases of construction, and continue after project completion for a sufficient period of time to obtain short-term (1 year) and long-term data (2 years or longer). In all instances major research emphasis should at least include: (1) factors related to geographic and meteorological conditions, (2) sedimentology, (3) water quality, (4) hydrodynamics, (5) resident and migratory biota at the bottom and throughout the water column, (6) interactions between biotic and abiotic elements, and (7) socioeconomic circumstances. By using such a research-oriented approach in future engineering projects, many important coastal resources could be protected, or even enhanced, and most environmental problem areas would be identified and avoided.

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APPENDIX A

HYDROLOGICAL AND SEDIMENT DATA BY STATION

Hydrological and sedimentological data, by station and date, for offshore stations (9-meter depth) before and after dredging--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

HYDROLOGICAL AND SEDIMENTOLOGICAL DATA, BY STATION AND DATE, FOR
OFFSHORE STATIONS (30-FOOT DEPTH) BEFORE AND AFTER DREDGING -
BEACH RESTORATION PROJECT, PANAMA CITY BEACH, FLORIDA (NOVEMBER
1974 TO NOVEMBER 1977).

STATION A - CONTROL

PARAMETER	DATE	11/74	2/75	5/75	8/75	MEAN	RANGE
HYDROLOGICAL							
SALINITY, 30/0		34.500	34.390	32.220	26.220	31.832	26.22 TO 34.50
WATER TEMP., C		21.000	17.400	26.200	28.300	23.225	17.40 TO 28.30
SEDIMENT							
GRANULE, WT.%							
SAND		99.861	99.892	99.826		99.860	99.83 TO 99.89
SILT		0.139	0.108	0.174		0.140	0.11 TO 0.17
CLAY							
MEAN GRAIN SIZE, #		2.203	2.294	2.433		2.310	2.20 TO 2.43
ST. DEVIATION, #		0.715	0.595	0.499		0.603	0.50 TO 0.71
SKEWNESS		-0.156	-0.246	-0.199		-0.25	-0.16 TO -0.16
KURTOSIS		1.014	1.145	1.227		1.129	1.01 TO 1.23
T. CARBON, WT.%		0.113	0.144	0.080	0.070	0.102	0.07 TO 0.14
T. ORGANIC C		0.081	0.024	0.047	0.050	0.050	0.02 TO 0.08
T. CARBONATE C		0.032	0.120	0.033	0.020	0.051	0.02 TO 0.12

STATION B - CONTROL

PARAMETER	DATE	11/74	2/75	5/75	8/75	MEAN	RANGE
HYDROLOGICAL							
SALINITY, 30/0		34.330	33.890	32.170	26.110	31.625	26.11 TO 34.33
WATER TEMP., C		20.890	17.500	25.000	28.500	23.200	17.50 TO 28.50
SEDIMENT							
GRANULE, WT.%							
SAND		99.871	99.341	100.300	99.886	99.774	99.34 TO 100.00
SILT		0.129	0.157		0.114	0.133	0.11 TO 0.16
CLAY							
MEAN GRAIN SIZE, #		2.213	2.169	2.330	2.447	2.290	2.17 TO 2.45
ST. DEVIATION, #		0.802	0.744	0.562	0.554	0.665	0.55 TO 0.80
SKEWNESS		-0.236	-0.382	-0.234	-0.059	-0.38	-0.38 TO -0.09
KURTOSIS		1.262	1.177	1.134	1.376	1.237	1.13 TO 1.38
T. CARBON, WT.%		0.106	0.334	0.382		0.174	0.08 TO 0.33
T. ORGANIC C		0.084	0.114	0.008		0.069	0.01 TO 0.11
T. CARBONATE C		0.022	0.220	0.374		0.105	0.02 TO 0.22

TREASURE ISLAND MOTEL (STATION 1) - CONTROL

PARAMETER	DATE	4/76	5/76	7/76	MEAN	RANGE
HYDROLOGICAL						
SALINITY, 30/0		33.330	32.330	33.280	32.980	32.33 TO 33.33
WATER TEMP., C		20.200	25.700	23.000	24.633	20.20 TO 28.00
SEDIMENT						
GRANULE, WT.%						
SAND		0.156			0.156	0.16 TO 0.16
SILT		99.836			99.836	99.84 TO 99.84
CLAY		0.008			0.008	0.01 TO 0.01
MEAN GRAIN SIZE, #		2.407			2.407	2.41 TO 2.41
ST. DEVIATION, #		0.470			0.470	0.47 TO 0.47
SKEWNESS		0.020			0.020	0.02 TO 0.02
KURTOSIS		1.228			1.228	1.23 TO 1.23
T. CARBON, WT.%		0.269			0.269	0.27 TO 0.27
T. ORGANIC C		0.032			0.032	0.03 TO 0.03
T. CARBONATE C		0.237			0.237	0.24 TO 0.24

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 8/10/76	DATE - EXPERIMENTAL 8/10/76
HYDROLOGICAL		
SALINITY, ‰/‰	35.280	35.280
WATER TEMP., °C	27.000	27.000
SEDIMENT		
GRANULE, WT.%		
SAND		99.856
SILT		0.144
CLAY		
MEAN GRAIN SIZE, #		2.481
ST. DEVIATION, #		0.411
SKEWNESS		-0.137
KURTOSIS		1.017
T. CARBON, WT.%		0.347
T. ORGANIC C		0.336
T. CARBONATE C		0.011

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 8/18/76	DATE - EXPERIMENTAL 8/18/76
HYDROLOGICAL		
SALINITY, ‰/‰	35.280	35.280
WATER TEMP., °C	27.000	27.000
SEDIMENT		
GRANULE, WT.%		
SAND		0.271
SILT		99.418
CLAY		0.311
MEAN GRAIN SIZE, #		2.493
ST. DEVIATION, #		0.530
SKEWNESS		-0.067
KURTOSIS		1.436
T. CARBON, WT.%		0.308
T. ORGANIC C		0.300
T. CARBONATE C		0.008

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 8/23/76	DATE - EXPERIMENTAL 8/23/76
HYDROLOGICAL		
SALINITY, ‰/‰	35.280	35.280
WATER TEMP., °C	27.000	27.000
SEDIMENT		
GRANULE, WT.%		
SAND		0.063
SILT		99.634
CLAY		0.303
MEAN GRAIN SIZE, #		2.501
ST. DEVIATION, #		0.458
SKEWNESS		0.024
KURTOSIS		1.209
T. CARBON, WT.%		0.361
T. ORGANIC C		0.177
T. CARBONATE C		0.184

PARAMETERS	TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL	
	DATE - CONTROL 9/1/76	DATE - EXPERIMENTAL 9/1/76
HYDROLOGICAL		
SALINITY, 00/0	32.610	32.610
WATER TEMP., C	27.800	27.800
SEDIMENT		
GRANULE, WT.%	0.187	
SAND	99.672	97.108
SILT	0.141	2.892
CLAY		
MEAN GRAIN SIZE, #	2.323	2.747
ST. DEVIATION, #	0.558	0.587
SKEWNESS	-0.281	0.285
KURTOSIS	1.189	1.115
T. CARBON, WT.%	0.348	1.123
T. ORGANIC C	0.100	0.039
T. CARBONATE C	0.248	1.084

PARAMETERS	TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL	
	DATE - CONTROL 9/8/76	DATE - EXPERIMENTAL 9/8/76
HYDROLOGICAL		
SALINITY, 00/0	32.610	32.610
WATER TEMP., C	27.800	27.800
SEDIMENT		
GRANULE, WT.%		
SAND	99.776	0.224
SILT		
CLAY		
MEAN GRAIN SIZE, #	2.508	
ST. DEVIATION, #	0.507	
SKEWNESS	-0.015	
KURTOSIS	1.348	
T. CARBON, WT.%	0.302	
T. ORGANIC C	0.257	
T. CARBONATE C	0.045	

PARAMETERS	TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL	
	DATE - CONTROL 9/21/76	DATE - EXPERIMENTAL 9/21/76
HYDROLOGICAL		
SALINITY, 00/0	32.610	32.610
WATER TEMP., C	27.800	27.800
SEDIMENT		
GRANULE, WT.%		
SAND	91.896	6.104
SILT		
CLAY		
MEAN GRAIN SIZE, #	2.835	
ST. DEVIATION, #	0.736	
SKEWNESS	0.340	
KURTOSIS	1.070	
T. CARBON, WT.%	2.318	
T. ORGANIC C	0.462	
T. CARBONATE C	1.856	

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 10/14/76	DATE - EXPERIMENTAL 10/14/76
HYDROLOGICAL		
SALINITY, 00/0	33.060	33.060
WATER TEMP., ° C	24.900	24.900
SEDIMENT		
GRANULE, WT.%		0.092
SAND		99.626
SILT		0.283
CLAY		
MEAN GRAIN SIZE, #		2.452
ST. DEVIATION, #		0.481
SKENNESS		-0.165
KURTOSIS		1.202
T. CARBON, WT.%		0.281
T. ORGANIC C		0.187
T. CARBONATE C		0.094

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 10/18/76	DATE - EXPERIMENTAL 10/18/76
HYDROLOGICAL		
SALINITY, 00/0	33.060	33.060
WATER TEMP., ° C	24.900	24.900
SEDIMENT		
GRANULE, WT.%		98.611
SAND		1.389
SILT		
CLAY		
MEAN GRAIN SIZE, #		2.536
ST. DEVIATION, #		0.411
SKENNESS		0.155
KURTOSIS		1.068
T. CARBON, WT.%		0.722
T. ORGANIC C		0.700
T. CARBONATE C		0.072

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 11/1/76	DATE - EXPERIMENTAL 11/1/76
HYDROLOGICAL		
SALINITY, 00/0	33.170	33.170
WATER TEMP., ° C	18.000	18.000
SEDIMENT		
GRANULE, WT.%		0.108
SAND		98.769
SILT		1.123
CLAY		
MEAN GRAIN SIZE, #		2.507
ST. DEVIATION, #		0.536
SKENNESS		-0.042
KURTOSIS		1.492
T. CARBON, WT.%		0.519
T. ORGANIC C		0.316
T. CARBONATE C		0.203

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 12/17/76	DATE - EXPERIMENTAL 12/17/76
HYDROLOGICAL		
SALINITY, 00/0	34.060	34.060
WATER TEMP., C	12.500	12.500
SEDIMENT		
GRANULE, WT.%		0.052
SAND	99.876	99.086
SILT	0.124	0.882
CLAY		
MEAN GRAIN SIZE, #	2.300	2.524
ST. DEVIATION, #	0.577	0.471
SKEWNESS	-0.267	0.074
KURTOSIS	1.118	1.225
T. CARBON, WT.%	0.275	0.498
T. ORGANIC C	0.060	0.110
T. CARBONATE C	0.215	0.388

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 1/5/77	DATE - EXPERIMENTAL 1/5/77
HYDROLOGICAL		
SALINITY, 00/0	33.280	33.280
WATER TEMP., C	12.400	12.400
SEDIMENT		
GRANULE, WT.%		0.437
SAND	97.222	2.341
SILT		
CLAY		
MEAN GRAIN SIZE, #		2.518
ST. DEVIATION, #		0.597
SKEWNESS		-0.037
KURTOSIS		1.684
T. CARBON, WT.%		0.919
T. ORGANIC C		0.327
T. CARBONATE C		0.592

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 2/2/77	DATE - EXPERIMENTAL 2/2/77
HYDROLOGICAL		
SALINITY, 00/0	34.330	34.330
WATER TEMP., C	9.000	9.000
SEDIMENT		
GRANULE, WT.%		0.065
SAND	99.701	0.215
SILT		
CLAY		
MEAN GRAIN SIZE, #		2.499
ST. DEVIATION, #		0.486
SKEWNESS		-0.036
KURTOSIS		1.295
T. CARBON, WT.%		0.313
T. ORGANIC C		0.298
T. CARBONATE C		0.017

TREASURE ISLAND HOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
	3/1/77	3/1/77
HYDROLOGICAL		
SALINITY, 00/0	34.440	34.440
WATER TEMP., C	14.300	14.300
SEDIMENT		
GRANULE, WT.%		0.652
SAND		99.265
SILT		0.084
CLAY		
MEAN GRAIN SIZE, #		2.316
ST. DEVIATION, #		0.571
SKEWNESS		-0.297
KURTOSIS		1.228
T. CARBON, WT.%		0.253
T. ORGANIC C		0.163
T. CARBONATE C		0.090

TREASURE ISLAND HOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
	4/1/77	4/1/77
HYDROLOGICAL		
SALINITY, 00/0	33.500	33.500
WATER TEMP., C	22.400	22.400
SEDIMENT		
GRANULE, WT.%		0.201
SAND	90.829	99.214
SILT	0.171	0.585
CLAY		
MEAN GRAIN SIZE, #	2.303	2.487
ST. DEVIATION, #	0.560	0.414
SKEWNESS	-0.275	-0.103
KURTOSIS	1.140	1.031
T. CARBON, WT.%	0.214	0.339
T. ORGANIC C	0.202	0.326
T. CARBONATE C	0.012	0.011

TREASURE ISLAND HOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL	DATE - EXPERIMENTAL
	5/2/77	5/2/77
HYDROLOGICAL		
SALINITY, 00/0	34.800	34.280
WATER TEMP., C	21.800	21.800
SEDIMENT		
GRANULE, WT.%		0.016
SAND		99.801
SILT		0.183
CLAY		
MEAN GRAIN SIZE, #		2.491
ST. DEVIATION, #		10.389
SKEWNESS		-0.100
KURTOSIS		0.937
T. CARBON, WT.%		0.244
T. ORGANIC C		0.007
T. CARBONATE C		0.147

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 6/1/77	DATE - EXPERIMENTAL 6/1/77
HYDROLOGICAL		
SALINITY, 00/0	32.060	32.060
WATER TEMP., C	25.700	25.700
SEDIMENT		
GRANULE, WT.%	0.085	
SAND	97.964	
SILT	1.951	
CLAY		
MEAN GRAIN SIZE, #		2.356
ST. DEVIATION, #		0.677
SKENNESS		-0.193
KURTOSIS		1.572
T. CARBON, WT.%		1.206
T. ORGANIC C		0.206
T. CARBONATE C		1.000

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 7/5/77	DATE - EXPERIMENTAL 7/5/77
HYDROLOGICAL		
SALINITY, 00/0	33.560	33.560
WATER TEMP., C	27.500	27.500
SEDIMENT		
GRANULE, WT.%	0.335	
SAND	99.422	98.705
SILT	0.244	1.295
CLAY		
MEAN GRAIN SIZE, #	2.456	2.507
ST. DEVIATION, #	0.453	0.483
SKENNESS	-0.193	0.034
KURTOSIS	1.195	1.274
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 8/2/77	DATE - EXPERIMENTAL 8/2/77
HYDROLOGICAL		
SALINITY, 00/0	35.330	35.330
WATER TEMP., C	29.000	29.000
SEDIMENT		
GRANULE, WT.%		
SAND		97.489
SILT		2.511
CLAY		
MEAN GRAIN SIZE, #		2.529
ST. DEVIATION, #		0.463
SKENNESS		0.161
KURTOSIS		1.201
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 9/1/77	DATE - EXPERIMENTAL 9/1/77
HYDROLOGICAL		
SALINITY, 00/0	32.610	32.610
WATER TEMP., C	27.700	27.700
SEDIMENT		
GRANULE, WT.%		
SAND		96.923
SILT		3.077
CLAY		
MEAN GRAIN SIZE, #		2.544
ST. DEVIATION, #		0.465
SKEWNESS		0.197
KURTOSIS		1.219
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 10/3/77	DATE - EXPERIMENTAL 10/3/77
HYDROLOGICAL		
SALINITY, 00/0	33.060	33.060
WATER TEMP., C	25.000	25.000
SEDIMENT		
GRANULE, WT.%		0.092
SAND		99.597
SILT		0.311
CLAY		
MEAN GRAIN SIZE, #		2.491
ST. DEVIATION, #		0.505
SKEWNESS		-0.037
KURTOSIS		1.327
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL		
PARAMETERS	DATE - CONTROL 11/1/77	DATE - EXPERIMENTAL 11/1/77
HYDROLOGICAL		
SALINITY, 00/0		
WATER TEMP., C		
SEDIMENT		
GRANULE, WT.%		0.101
SAND		99.163
SILT		0.736
CLAY		
MEAN GRAIN SIZE, #		2.551
ST. DEVIATION, #		0.516
SKEWNESS		0.075
KURTOSIS		1.282
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 7/1/77	DATE - EXPERIMENTAL 7/1/77
HYDROLOGICAL		
SALINITY, 00/0	33.560	33.560
WATER TEMP., C	27.500	27.500
SEDIMENT		
GRANULE, WT.%		
SAND	99.700	98.641
SILT	0.300	1.359
CLAY		
MEAN GRAIN SIZE, #	2.445	2.499
ST. DEVIATION, #	0.445	0.525
SKEWNESS	-0.187	-0.001
KURTOSIS	1.178	1.388
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

SUN & SWIM MOTEL (STATION 2) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 7/1/77	DATE - EXPERIMENTAL 7/1/77
HYDROLOGICAL		
SALINITY, 00/0	33.560	33.560
WATER TEMP., C	27.500	27.500
SEDIMENT		
GRANULE, WT.%		
SAND	99.646	99.796
SILT	0.354	0.204
CLAY		
MEAN GRAIN SIZE, #	2.452	2.425
ST. DEVIATION, #	0.440	0.479
SKEWNESS	-0.179	-0.194
KURTOSIS	1.148	1.205
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

HILTON HOLIDAY INN (STATION 3) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 7/1/77	DATE - EXPERIMENTAL 7/1/77
HYDROLOGICAL		
SALINITY, 00/0	33.330	33.330
WATER TEMP., C	26.800	26.800
SEDIMENT		
GRANULE, WT.%		
SAND	99.879	98.964
SILT	0.121	0.114
CLAY		
MEAN GRAIN SIZE, #	2.214	1.749
ST. DEVIATION, #	0.615	1.064
SKEWNESS	-0.319	-0.460
KURTOSIS	1.109	0.824
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

SANDPIPER MOTEL (STATION 4) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 7/11/77	DATE - EXPERIMENTAL 7/11/77
HYDROLOGICAL		
SALINITY, 00/0	33.330	33.330
WATER TEMP., C	26.800	26.800
SEDIMENT		
GRANULE, WT.%		0.079
SAND	99.859	99.810
SILT	0.141	0.111
CLAY		
MEAN GRAIN SIZE, #	2.244	2.006
ST. DEVIATION, #	0.608	0.631
SKENNESS	-0.307	-0.414
KURTOSIS	1.158	0.954
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

PEPPERTREE CONDOMINIUM (STATION 5) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 7/11/77	DATE - EXPERIMENTAL 7/11/77
HYDROLOGICAL		
SALINITY, 00/0	33.330	33.330
WATER TEMP., C	26.800	26.800
SEDIMENT		
GRANULE, WT.%		99.863
SAND	99.864	99.863
SILT	0.136	0.137
CLAY		
MEAN GRAIN SIZE, #	2.305	2.257
ST. DEVIATION, #	0.593	0.575
SKENNESS	-0.331	-0.280
KURTOSIS	1.344	1.111
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

BLUE DOLPHIN MOTEL (STATION 6) - CONTROL & EXPERIMENTAL

PARAMETERS	DATE - CONTROL 7/11/77	DATE - EXPERIMENTAL 7/11/77
HYDROLOGICAL		
SALINITY, 00/0	33.330	33.330
WATER TEMP., C	26.800	26.800
SEDIMENT		
GRANULE, WT.%	0.340	0.137
SAND	99.520	99.557
SILT	0.139	0.106
CLAY		
MEAN GRAIN SIZE, #	2.116	2.311
ST. DEVIATION, #	0.760	0.612
SKENNESS	-0.397	-0.340
KURTOSIS	1.092	1.391
T. CARBON, WT.%		
T. ORGANIC C		
T. CARBONATE C		

APPENDIX B

CHECKLIST OF ORGANISMS

Checklist of organisms collected at offshore stations (9-meter depth) before and after dredging--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

CHECKLIST OF ORGANISMS COLLECTED AT OFF SHORE STATIONS (30-FOOT DEPTH)
BEFORE AND AFTER DREDGING - BEACH RESTORATION PROJECT, PANAMA CITY
BEACH, FLORIDA (NOVEMBER 1974 TO NOVEMBER 1977).

CNIDARIA	LEPTON SP.
ACTINIARIA (SEA ANEMONES)	LUCINA MULTILINEATA
UNIDENTIFIED SP.	LUCINA RADIANA
PLATYHELMINTHES	LYNSEA H. FLORIDANA
TURBELLARIA (FLATWORMS)	MACOMIA CONSTRICTA
UNIDENTIFIED SP.	MACRACALLISTA MACULATA
NEMERTINEA (RIBBON WORMS)	MACRACALLISTA NIMBOSA
UNIDENTIFIED SP.	MACTRA SP.
NEMATODA (ROUNDWORMS)	MUSCILLUS LATERALIS
UNIDENTIFIED SP.	NUCULANA ACUTA
PHORONIDA (PHORONIDS)	PANDRA TRILINEATA
<u>PHORONIS ARCHITECTA</u>	PAPYRIDEA SOLENTIFORMIS
BRACHIOPODA (LAMP SHELLS)	PARVILUCINA BLANDA
<u>GLOTTIDIA PYRAMIDATA</u>	PF DIPLOMA MARGARITACEUM
MOLLUSCA (SHELLFISH)	PITAE SIMPSONI
GASTROPODA (SNAILS)	SEMELE PROFICUA
ACTECCINA CANALICULATA	SOLEMYA SP.
ACTECCINA CANDEI	SOLEMYA VELUM
ACTECINA PUNCTOSTRIATUS	SOLEN VIRIDIS
ANACHIS FLORIDANA	STRIGILLA MIRABILIS
BULLA STRIATA	TELLIDORA CRISTATA
CAEUM FLORIDANUM	TELLINA A. TAYLORIANA
CAECLUM IMORICATUM	TELLINA AEQUISTRIATA
CAEUM PULCHELLUM	TELLINA IRIS
CYLICHINELLA BIDENTATA	TELLINA TAMPAENSIS
DIASTICHA VARIUM	TELLINA TEXANA
MELANILLA JAVAIENSIS	TELLINA VERSICOLOR
NASSARIUS ACUTUS	TRACHYCARDIUM MURICATUM
NATICA PUSILLA	VARICORBULA OPERCULATA
OLIVA SAYANA	VENERIDAE UNIDENTIFIED SP.
OLIVELLA BULLULA	ANNELOIDA (SEGMENTED WORMS)
OLIVELLA MINUTA	CLIOCHETA
OLIVELLA MUTICA	UNIDENTIFIED SP.
OLIVELLA PUSILLA	POLYCHAETA
PHILINE SAGRA	AGLAOPHAMUS VERRILLI
POLINICES DUPLICATUS	AMERICANUPHIS MAGNA
TEREBRA CONCAVA	AMPHARETE ACUTIFRONS
TEREBRA DISLOCATA	ANAITIDES ERYTHROPHYLLUS
TURBONILLA CINRADII	ANTICE SP.
TURBONILLA ELEGANTULA	ANONICES MAYAQUEZENSIS
TURBONILLA SP.	APCOPHICNOPIA PYGMAEA
PELECYPODA (CLAMS)	ARENICOLA CRISTATA
AYADARA FLORIDANA	ARICIDEA CERRUTI
ANATINA ANATINA	ARICIDEA FAUVEL
CASSIDOMYA COSTELLATA	ARICIDEA FRAGILLIS
CHICNE CANCELLATA	ARICIDEA PHILIPINAE
CHICNE GRUS	ARICIDEA SUECICA
CUMINGIA TELLINOIDES	ARICIDEA TAYLORI
CUNINGIA T. VANHYNINGI	ARICIDEA WASSI
CUNA CALLI	ARICIDEA SP.
DIPLOFONTA SEMIASPERA	ARMANDIA AGILIS
DIPLOFONTA SP.	ARMANDIA MACULATA
EVILIA CONCENTRICA	ASYCHIS CAROLINAE
LAEVICARDIUM LAEVIGATUM	AXIOFELLA MUCOSA
LAEVICARDIUM MONTONI	BRANCHIOASYCHIS AMERICANA
LAEVICARDIUM PICTUM	BRANIA CLAVATA
	BRANIA WELLFLEETENSIS
	CASPIRA INCERTA
	CASPITELLA CAPITATA
	CASPITELLIDES JONESI
	CASPITELLIDAE UNIDENTIFIED SP.
	CAPAZZIELLA SP.
	CAULLERIELLA SP.
	CEPHALONECTES TERRITABILIS
	CEPHALONECTES MIRABILIS
	CHAEIZONE GAYHEADIA

CHAETOCNE SETOSA
 CHLOEIA VIRIDIS
 CHONE SP.
 CIRRATULIDAE UNIDENTIFIED SP.
 CIRRPHORUS LYRIFORMIS
 CISTERCIDES GULDII
 DASYERANCHUS LUMBRICOIDES
 DIPATRA CUPREA
 DISPIG UNICINATA
 DORVILLEA SOCIAILIS
 DRIESCHIA PELLUCIDA
 ENCYCLOPANCHUS SANGUINEUS
 ETHEONE ALBA
 ETHEONE LACTEA
 EIA ALTA SANGUINEA
 EUNICE ANTENNATA
 EURYTHOE COMPLANATA
 EXOCONE DISPAR
 FLABELLY GERA SP.
 GLYCERA AMERICANA
 GLYCERA DIBRANCHIATA
 GLYCERA OXYCEPHALA
 GLYCERA SP.
 GLYCINDE SOLITARIA
 GONIADA LITTOREA
 GRUDELL EPIS NEVACANA
 GYPTIS BREVIPALPA
 GYPTIS VITTATA
 HAPLOSCLOPLOS FOLIOSUS
 HAPLOSCLOPLOS FRAGILIS
 HAPLOSCLOPLOS ROBUSTUS
 HARMOTHOE IMBRICATA
 HARMOTHOE LUNULATA
 HEVYLIDS ROSEUS
 HETEROMASTUS FILIFORMIS
 ISOLDA PULCHELLA
 LAFONEREIS CULVERI
 LOIMIA MEDUSA
 LOIMIA VIRIDIS
 LUMBRINERIS ACUTUS
 LUMBRINERIS CRUZENSIS
 LUMBRINERIS ERECTA
 LUMBRINERIS TENUIS
 LUMBRINERIS TETRAURA
 LYSIDICE NINETTA
 LYSSILA ALBA
 MACROCYLENE ZONALIS
 MAGELINA LONGICORNIS
 MAGELINA PETTIBONEAE
 MAGELINA RIOJA
 MAGELINA SP.
 MALACCCERUS INDICUS
 MEDOMASTUS CALIFORNIENSIS
 MEGALOMMA BILOCULATUM
 MESOCEA TOPTERUS SAGITTARIUS
 MICROPHTHALMUS ABERRANS
 MICROPHTHALMUS SZELKOWII
 MICROPHTHALMUS SP.
 MICROSPIO PIGMENTATA
 MINUSPIO CIRRIFERA
 MYRICCHELE SP.
 NEANTHEES ACUMINATA
 NEANTHEES SP.
 NEANTHEES SUCINEA
 NEPMHTYS BUCERA
 NEPMHTYS PICTA
 NEPTEIS LAMELLOSA
 NEPTEIS BELLAGICA
 NEPTEIS SP.
 NOTOMASTUS HEMIPODUS
 NOTOMASTUS LATERICEUS
 ONUBETIS ESEMITA OCULATA
 ONUPHIS NEBULOSA
 ONUBETIS BALLICA
 OSMELIA SP.

ORHINIA RISERI
 OWENIA FUSIFORMIS
 PARANAITES SPECIOSA
 PARACNIDES LYRA
 PARACNIDES SP.
 PARACNIS FULGENS
 PARACNIS SP.
 PARAPICNOCSPID PINNATA
 PARAPICNOCSPID LONGICIRRATA
 PHERIS EMERSI
 PHYLLODCE ARENAE
 PHYLLODOCE SP.
 PHYLIC CRNATUS
 PISTA CRISTATA
 PISTA PALMATA
 PODARKE OBSCURA
 POECILOCHAETUS JOHNSONI
 POLYCIPRUS EXIMIUS
 POLYOCRA SOCIALIS
 POLYOCRA TETRABRANCHIA
 POLYODONTES LUPINA
 POLYODONTAE UNIDENTIFIED SP.
 PRIONCSPID CRISTATA
 PRICKCSPID STEENSTRUPI
 PSEUDEURYTHOE AMBIGUA
 RULLIERINEREIS MEXICANA
 SABELLA MICROPHTHALMA
 SCOLELEPTIS SQUAMATA
 SCOLELEPTIS TEXANA
 SCOLEOPLCS ARMIGER
 SCOLEOPLCS RUBRA
 SIGALION ARENICOLA
 SIGAMERA BASSI
 SIGAMERA TENTACULATA
 SPHAEROSYLLIS SP.
 SPIO PETTIBONEAE
 SPIONIDAE UNIDENTIFIED SP.
 SPIOCHEA TOPTERUS OCULATUS
 SPIOCHEAES BOMBYX
 STRELAYES BOA
 STRETSOSYLLIS ARENAE
 THARYX ANNULOSUS
 TRAVISIA HORSONAE
 WEBSTERINEREIS TRIDENTATA

SIPUNCULICA (PEANUT WORMS)
 ASPIODSIPHON SP.
 COLEIRIA TRICHOCEPHALA
 SIPUNCULUS LONGIPAPILLUS
 UNIDENTIFIED SP.

ECHIURIDA (ECHIURIDS)
 UNIDENTIFIED SP.

ARTHROPODA (CRUSTACEANS)

AMPHIPDCA
 ACANTHCHAUSTORIUS SP.
 AMPELISCA ABDITA
 AMPELISCA SP.
 AMPELISCA VADORUM
 AMPELISCA VERRILLI
 ARGISSA SP.
 CAPRELLIDAE UNIDENTIFIED SP.
 CARINGDATEA SP.
 COROPHUM SP.
 CYWADUSA SP.
 ELASMCUS SP.
 ERICHTHONIUS SP.
 GAMMAROPSYC SP.
 GITANOPSIS SP.
 HIPPEDON SP.
 HYPERIA SP.

LEMBOS SP.
 LEPICACTYLUS SP.
 LISTIELLA SP.
 LYSIANOPSI SP.
 MELITA APPENDICULATA
 MICRCDEUTOPUS SP.
 MICRCPROTOPIUS SP.
 MONCULODES SP.
 PARAPHOXUS SP.
 PHOTIS SP.
 PROTOHAUSTORIUS SP.
 PSEUDOHAUSTORIUS SP.
 PSEUDOPLATYTSCHOPUS SP.
 SYNCELIDIUM SP.
 TIRON BIOSCELLATUS
 TIRON SP.
 UNIDENTIFIED SP.
 ANOMURA
 ALBUNEA PARETII
 EUCERAMUS PRAEFLONGUS
 LEPTODORA WEBSTERI
 PAGURUS LONGICARPI
 PAGURUS SP.
 PETECHIRUS DIDGENES
 PETRCLISTHES GALATHINUS
 BRACHYURA
 CALLINECTES SAPIDUS
 CALLINECTES SP.
 OTSODACTYLUS MELLITAE
 HEOPATUS EPHELITICUS
 LISINA DURIA
 METOPORHAPIS CALCARATA
 OSACHILA TUBIFCSA
 OVALIPES OCELLATUS
 PANOPPEUS HERBSTI
 PERSEPHONAE P. AQUILONARIS
 PINNIXIA CHAETOPTERANA
 PINNIXIA CYLINDRICA
 PINNIXIA CRISTATA
 PINNIXIA LEPTOSYNAPTAE
 PINNIXIA LUNZI
 PINNIXIA BEARSEI
 PINNIXIA RETINENS
 PINNIXIA SAYANA
 PINNIXIA SP.
 PINNITHERES MACULATUS
 PINNITHERES OSTRUM
 PINNITHERES SP.
 PORTUNUS GIBBESII
 PORTUNUS SAYI
 PORTUNUS SP.
 PORTUNUS SPINIMANUS
 PORTUNIDAE UNIDENTIFIED SP.
 RAVILIA MURICATA
 CALLIANASSIDAE
 CALLIANASSA JAMAICENSIS
 CARIODEA
 ALPHELS HETEROCHAELOS
 AMBICEXTER SYMMETRICUS
 HIPPOLYTE PLEURACANTHA
 LATREUTES PARVULUS
 LEPTOCHELA SERRATORBITA
 OGYRIDES ALPHAEOSTRIS
 OGYRIDES LIMICOLA
 SERCIMENES LONGICAUDATUS
 PRCESSA HEMBILII
 PRCESSA VICTINA
 SYNALPHEUS SP.
 UNIDENTIFIED SP.
 CUMACEA
 CYCLOPSIS SP.
 CYCLOPSIS VARIANS
 OXYEOSTYLIS SMITHI

SPILOCUMA SALOMANI
 UNIDENTIFIED SP.
 ISOPODA
 ANCINA DEPRESSUS
 APANTHURA MAGNIFICA
 CHIRIDCTEA EXCAVATA
 EDOTEA MONTOSA
 LEPTOSTRACA
 NEBALIA SP.
 MYSIDACEA
 BOWMANIELLA SP.
 MYSIOPSIS BIGELOWI
 PRAUNUS FLEXUOSUS
 UNIDENTIFIED SP.
 GSTRACCA
 HAPLOCYTHERIDEA SEPIPUNCTATA
 SARSIELLA CHILDI
 UNIDENTIFIED SP.
 PENAIDEA
 ACETES AMERICANUS
 LUCIFER FAXONI
 PENAeus DUORARUM
 SICYCNYIA BREVIROSTRIS
 SICYCNYIA SP.
 SICYCNYIA TYPICA
 TRACHYPENAEUS CONSTRICTUS
 STOMATOPODA
 ACANIUS SQUILLA BIMINIENSIS
 CORONIS EXCAVATRIX
 TANAIDACEA
 UNIDENTIFIED SP.
 ECHINODERMATA
 ASTEROIDEA (STARFISHES)
 ASTROPECTEN ARTICULATUS
 LUDIA ALTERNATA
 ECHINOCIDEA (SAND DOLLARS; URCHINS)
 LYTECHINUS VARIEGATUS
 MOIRIA ATROPS
 MELLITA QUINQUESPERFORATA
 UNIDENTIFIED SP.
 HOLOTHOUCIDEA (SEA CUCUMBERS)
 LEPTOCYANAPTA SP.
 UNIDENTIFIED SP.
 OPHIUROIDEA (BRITTLE STARS)
 HEIMPHOLIS ELONGATA
 MICRAPHOLIS GRACILLIMA
 OPHIOPHRAGMUS FILIGRANEUS
 OPHIOPHRAGMUS MOOREI
 OPHIOPHRAGMUS WEGEMANI
 UNIDENTIFIED SP.

HEMIICHOARATA
 ENTEROPNEUSTA (ACORN WORMS)
 UNIDENTIFIED SP.

CEPHALOCHORDATA (LANCELETS)
 BRANCHIOSTOMA FLORIDAE

VERTEBRATA
 PISCES (FISHES)
 GOBIIDAE, UNIDENTIFIED SP.
 HEMIPTERONCTUS NOVACULA
 LEPOPHYDUM GRAELLI
 MICROGOBius CARRI
 OPHICLIDAE, UNIDENTIFIED SP.
 SYMPHURUS SP.

APPENDIX C

BIOLOGICAL AND BIOSTATISTICAL DATA BY STATION

Biological and biostatistical data, by station and date, for offshore stations (9-meter depth) before and after dredging--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

BIOLOGICAL AND BIOSTATISTICAL DATA, BY STATION AND DATE, FOR OFFSHORE STATIONS (30-FOOT DEPTH) BEFORE AND AFTER DREDGING - BEACH RESTORATION PROJECT, FORT MYERS BEACH, FLORIDA (NOVEMBER 1974 TO NOVEMBER 1977).

STATION A - CONTROL

SPECIES	NO. OF INDIVIDUALS					
	11/74	2775	5775	8775	TOTAL	PCT.
PLATYHELMINTHES						
TURBELLARIA (FLATWORMS)						
UNIDENTIFIED SP.	0	0	4	1	5	0.58
NEMERTINEA (RIBBON WORMS)						
UNIDENTIFIED SP.	1	4	7	8	20	2.33
NEMATODA (ROUNDWORMS)						
UNIDENTIFIED SP.	0	19	7	18	44	5.12
MOLLUSCA (SHELLFISH)						
GASTROPODA (SNAILS)						
ACTECCINA CANDEI	0	0	0	1	1	0.12
ACTECINA PUNCTOSTRIATUS	0	0	0	1	1	0.12
NATICA PLISILLA	0	0	0	2	2	0.23
OLIVELLA MULTICA	0	0	0	2	2	0.23
POLINICES DUPLICATUS	0	0	2	0	2	0.23
TEREbra DISLOCATA	0	0	1	0	1	0.12
PELECYPODA (CLAMS)						
ERVILIA CONCENTRICA	0	0	1	1	2	0.23
LUCINA MULITLINEATA	0	2	2	4	8	0.93
PERIPLICMA MARGARITACEUM	0	1	0	0	1	0.12
STRIGILLA MIRABILIS	0	0	2	10	12	1.40
TELLINA VERSICOLOR	0	0	1	19	20	2.33
ANNELIDA (SEGMENTED WORMS)						
OLIGOCHAETA						
UNIDENTIFIED SP.	22	35	5	0	62	7.22
POLYCHAETA						
APCERICNOSPIA PYGMAEA	0	1	0	3	5	0.58
ARICILIA SP.	2	2	0	4	4	0.47
ARMANCIA MACULATA	5	0	0	4	29	3.38
ERANIA CLAVATA	0	0	0	1	1	0.12
ERANIA WELLFLEETENSIS	0	0	0	4	6	0.70
CAPITELLICAE UNIDENTIFIED SP.	0	0	0	0	2	0.23
DIOPATRA CUPREA	0	1	0	0	1	0.12
CISPUS UNCINATA	0	0	0	1	1	0.12
ETEONE LACTEA	0	0	0	7	8	0.93
GLYCERA AMERICANA	0	0	0	4	5	0.58
HAPLOCYCLOPLUS FOLIOSUS	0	0	0	1	1	0.12
HAPLOCYCLOPLUS ROBUSTUS	0	0	1	0	1	0.12
LUMBRICINERIS CRUZENSIS	0	0	0	0	11	1.28
MAGELCNA RIOJA	0	0	0	0	1	0.12
MAGELCNA SP.	0	0	0	0	1	0.12
MESOCYCLOPTERUS SAGITTARILIS	0	0	0	0	2	0.23
MINUSPIA CIRRIFERA	0	0	1	1	2	0.23
NEPHIUS BUCERA	0	0	0	0	2	0.23
NEPHIUS PICTA	0	0	2	0	13	1.75
ONUPHIUS FREMITA OCULATA	1	0	0	0	1	0.12
PARANAIAS SPECIOSA	0	0	0	0	1	0.12
PARACNIDES LYRA	1	0	5	0	25	2.91
PARACNIDES SP.	2	2	0	0	2	0.23
PARAPRIONOSPIA PINNATA	17	1	3	0	21	2.44
PHYLLOCOCCE ARENAE	0	0	0	4	4	0.47
PHYLLOCOCCE SP.	0	0	0	5	5	0.58
POECILOCHAEIUS JOHNSONI	0	0	0	0	1	0.12
PRIONOSPIA CRISTATA	47	76	4	50	132	15.37
SCOLELEPIS SQUAMATA	2	0	4	0	2	0.23
SCOLELEPIS TEXANA	0	0	1	0	9	1.05
SCOLOPLOS RUGRA	0	0	0	0	1	0.12

STATION A - CONTROL
(CONTINUED)

SPECIES	NO. OF INDIVIDUALS					
	11/74	2775	5275	8775	TOTAL	PCT.
<u>SIGAMBRA BASSI</u>	0	1	1	2	4	0.47
<u>SPIO PETITIONAE</u>	7	5	9	1	22	2.56
<u>SPTOCHAE TOPPERUS</u>	1	0	0	0	1	0.12
<u>SPLOPHANES OCULATUS</u>	0	1	42	2	45	5.24
<u>SPLOPHANES BOMBYX</u>						
 ARTHROPODA (CRUSTACEANS)						
 AMPHIPODA						
<u>ACANTHOHAUSTORIUS</u> SP.	0	0	8	2	10	1.16
<u>LYSIANOPSIS</u> SP.	0	0	1	0	1	0.12
<u>PROTOFAUSTORIUS</u> SP.	0	12	58	15	85	9.90
<u>PSEUDOFALSTORIUS</u> SP.	0	33	4	3	10	1.16
<u>PSEUDOPLATYPSCHNOPIUS</u> SP.	1	22	2	16	21	2.44
<u>SYNCHELYDIUM</u> SP.	0	2	2	0	5	0.58
 ANOMURA						
<u>ALBUNEA PARETII</u>	1	0	0	0	1	0.12
 BIVALVIA						
<u>PINNIXIA CRISTATA</u>	0	0	0	1	1	0.12
<u>PINNITHERES MACULATUS</u>	0	0	2	0	2	0.23
<u>PORTUNUS GIBBESII</u>	0	0	0	1	1	0.12
<u>PORTUNUS SPPIMANUS</u>	1	0	0	0	1	0.12
<u>RANILIA MURICATA</u>	0	0	0	2	2	0.23
 CARTACEA						
<u>PROCESSA HEMPHILLI</u>	0	0	7	0	7	0.81
<u>PROCESSA VICINA</u>	0	0	0	1	1	0.12
 CLINACEA						
<u>CYCLAPSIS VARIANS</u>	0	0	0	1	1	0.12
<u>OXYURESTYLIS SMITHI</u>	0	0	3	0	3	0.35
UNIDENTIFIED SP.	0	0	0	2	2	0.23
 OSTRACCCA						
UNIDENTIFIED SP.	0	0	0	8	8	0.93
 PENAEDEA						
<u>SICYCNIA BREVIROSTRIS</u>	0	1	0	0	1	0.12
 ECHINODERMATA						
 ECHINOIDEA (SAND DOLLARS; URCHINS)						
<u>MELLITA GUINQUESPERFORATA</u>	0	0	0	45	45	5.24
 MOLYTHURICIDA (SEA CUCUMBERS)						
UNIDENTIFIED SP.	0	0	0	3	3	0.35
 Ophiurida (BRITTLE STARS)						
UNIDENTIFIED SP.	0	0	11	0	11	1.28
 CEPHALOCHORDATA (LANCELETS)						
<u>FRANCISTOMA FLORIDA</u>	0	1	59	19	79	9.20
 VERTEBRATA						
 PISCES (FISHES)						
<u>HEMIETEENCIUS NOVACULA</u>	0	0	0	1	1	0.12
<u>OPHIOTITIDAE, UNIDENTIFIED</u> SP.	0	0	1	0	1	0.12
 TOTALS		129	188	299	243	859
NC. SPECIES		15	27	41	43	75
NC. IND. PER M2		2064	3008	4784	3888	
S-W INDEX - H ² (LN)		1.923	2.154	2.801	3.113	
EVENNESS - J		0.710	0.654	0.754	0.828	
AV. NO. SPECIES		31.5			AV. S-W INDEX	2.498
AV. NC. IND. PER M2		34.36	0		AV. EVENNESS	0.736

STATION 8 - CONTROL

SPECIES	NO. OF INDIVIDUALS						PCI.
	11/79	2775	5275	8775	TOTAL		
CNIDARIA							
ACTINIARIA (SEA ANEMONES)							
UNIDENTIFIED SP.	0	0	0	2	2	2	0.17
PLATYHELMINTHES							
TURBELLARIA (FLATWORMS)							
UNIDENTIFIED SP.	0	0	2	1	3	3	0.26
NEMERTINEA (RIBBON WORMS)							
UNIDENTIFIED SP.	0	3	6	7	16	16	1.39
NEMATODA (ROUNDWORMS)							
UNIDENTIFIED SP.	0	18	2	11	31	31	2.70
MOLLUSCA (SHELLFISH)							
GASTROPODA (SNAILS)							
ACTECCINA CANDEI	0	0	0	6	6	6	0.52
PELECYFIDA (CLAMS)							
CHIONE CANCELLATA	0	1	0	0	1	1	0.09
ERVILIA CONCENTRICA	0	0	2	1	3	3	0.26
STRIGILLA MIRABILIS	0	1	7	74	82	82	7.14
TELLINA VERSICOLOR	0	0	0	28	28	28	2.44
ANNELIDA (SEGMENTED WORMS)							
CLIGGCCHAETA							
UNIDENTIFIED SP.	18	26	1	10	55	55	4.79
PCLYCHAETA							
AGLACRAPHANUS VERRILLI	1	0	0	0	1	1	0.09
AMPHARETE ACUTIFRONS	1	0	0	0	1	1	0.09
ANATIIDES ERYTHROPHYLLOS	0	0	1	0	1	1	0.09
APOPHIONCSPIO PYGMAEA	0	0	2	0	2	2	0.17
ARICICHA FRAGILIS	1	0	0	1	2	2	0.17
ARMANCIA MACULATA	1	1	24	11	49	49	4.26
BRANIA WELLFLEETENSIS	4	1	1	3	9	9	0.78
CAPITELLIDAE UNIDENTIFIED SP.	1	0	0	0	1	1	0.09
CAULERIUMA SP.	0	0	0	2	2	2	0.17
CERAICNEREIS IRRITABILIS	0	0	0	0	2	2	0.17
CIRRATILLIDAE UNIDENTIFIED SP.	0	1	0	0	1	1	0.09
DISPIS UNGINATA	0	0	0	1	1	1	0.09
EETECA LACTEA	0	0	0	1	5	5	0.44
GLYCERA AMERICANA	0	0	0	3	3	3	0.26
GYPSIS VITIATA	4	1	0	0	5	5	0.44
HAPLOCYCLOPS FRAGILIS	0	1	0	0	1	1	0.09
HETEFIMASTUS FILIFORMIS	3	0	0	0	3	3	0.26
LUMBYNERIS CEUZEensis	0	0	0	2	2	2	0.17
PAGELLA SP.	1	0	0	0	1	1	0.09
MEDICLASTUS CALIFCIENSIS	0	0	0	0	1	1	0.09
MESOCHAETICPTERUS SAGITTARIUS	0	0	0	0	3	3	0.26
MINUSPIC CIRRIFERA	0	0	1	0	1	1	0.09
NEPHITYS BUGERA	0	0	0	1	1	1	0.09
NEPHITYS PICIA	0	0	0	6	10	10	0.87
NOTICLASTUS HEMIPODUS	0	0	0	4	2	2	0.17
OPHELIA SP.	9	3	0	0	17	17	1.48
OWENIA FUSIFERMIS	1	0	0	0	1	1	0.09
PARAZIDIDES LYRA	3	3	3	0	7	7	0.61
PARACRIS FULGENS	0	0	0	0	3	3	0.26
PARAPHILACSPIC PINNATA	10	1	0	0	11	11	0.96
PHYLLODICE ARENAE	0	0	2	0	2	2	0.17
PHYLLODICE SP.	0	0	0	0	2	2	0.17
PICELICHAETUS JCHNSONI	0	1	0	0	1	1	0.09

STATION 8 - CONTROL
(CONTINUED)

SPECIES	NO. OF INDIVIDUALS					
	11/74	2/75	5/75	8/75	TOTAL	PCT.
<u>FRICNGSPIO CRISTATA</u>	134	55	3	18	210	18.28
<u>SCOLELEPIS SQUAMATA</u>	1	1	0	0	2	0.17
<u>SCOLELEPIS TEXANA</u>	0	3	11	0	14	1.22
<u>SCOLEPLIS RUBRA</u>	0	2	0	0	2	0.17
<u>SPIO PETTIBONEAE</u>	9	1	22	5	37	3.22
<u>SPIONIDAE UNIDENTIFIED SP.</u>	2	0	0	0	2	0.17
<u>SPIOPLANES BCBYX</u>	0	0	29	7	36	3.13
<u>TRAVISIA HOBSCNAE</u>	0	0	0	3	3	0.26
 <u>SIPUNCULICA (PEANUT WORMS)</u>						
<u>SIPUNCULLUS LENGPAPILLCSUS</u>	0	1	0	1	2	0.17
 <u>ARTHROPODA (CRUSTACEANS)</u>						
<u>AMPHICODA</u>						
<u>ACANTHOHAUSTORIUS SP.</u>	0	6	16	7	29	2.52
<u>AMPELISCA SP.</u>	1	0	0	1	2	0.17
<u>LISTRICELLA SP.</u>	0	0	0	3	3	0.26
<u>MONOCLODUS SP.</u>	0	0	0	1	1	0.09
<u>PROTOHALSTORIUS SP.</u>	0	29	100	8	137	11.92
<u>PSEUDOHALSTORIUS SP.</u>	0	0	1	1	2	0.17
<u>PSEUDOPLATYISCHNOPEUS SP.</u>	1	4	3	11	19	1.65
<u>SYNCHELIDIUM SP.</u>	3	0	6	1	10	0.87
<u>BRACHYURA</u>						
<u>PINNIXIA CRISTATA</u>	0	0	1	0	1	0.09
<u>PINNIXIA SAYANA</u>	0	0	0	6	6	0.52
<u>RANILIA MURICATA</u>	0	0	0	2	2	0.17
<u>CARIDEA</u>						
<u>ERCOSSA FEMPHILLI</u>	1	0	1	11	13	1.13
<u>ERCOSSA VICINA</u>	0	0	0	1	1	0.09
<u>CUMACEA</u>						
<u>CYCLASIS VARIANS</u>	0	0	0	2	2	0.17
<u>UNIDENTIFIED SP.</u>	0	0	0	3	3	0.26
<u>CSTRACCIA</u>						
<u>UNIDENTIFIED SP.</u>	0	0	0	3	3	0.26
<u>FENACEA</u>						
<u>TRACHYPERAEUS CONSTRICTUS</u>	1	0	0	0	1	0.09
 <u>ECHINODEMATA</u>						
<u>ECHINICIDEA (SAND DOLLARS; URCHINS)</u>						
<u>MELLITA QUINQUESPERFORATA</u>	5	0	0	6	11	0.96
<u>UNIDENTIFIED SP.</u>	0	0	7	0	7	0.61
<u>HOLOTHROIDEA (SEA CUCUMBERS)</u>						
<u>LEPTCSYNAPTA SP.</u>	0	0	0	1	1	0.09
<u>OPHTURICIDEA (BRITTLE STARS)</u>						
<u>SPHICEHRAGMUS FILOGRANEUS</u>	1	0	0	0	1	0.09
 <u>CEPHALOCHORDATA (LANCETTS)</u>						
<u>BRANCHICISTOMA FLORIDAE</u>	10	69	74	51	204	17.75
 <u>VERTEBRATA</u>						
<u>PISCES (FISHES)</u>						
<u>MICROGOBIAUS CARRI</u>	1	0	0	0	1	0.09
 <u>TOTALS</u>						
<u>NC. SPECIES</u>	236	249	334	328	1149	
<u>NO. IND. PER M2</u>	27	26	28	47	75	
<u>S-W INDEX - 1° (LN)</u>	3808	3984	5344	5248		
<u>EVENNESS - J</u>	1.898	2.247	2.320	3.000		
	0.576	0.690	0.696	0.779		
<u>AV. NC. SPECIES</u>	32.0					
<u>AV. NC. IND. PER M2</u>	4596.0					
<u>AV. S-W INDEX</u>		2.366				
<u>AV. EVENNESS</u>		0.685				

TREASURE ISLAND MOTEL (STATION 1) - CONTROL

SPECIES	NO. OF INDIVIDUALS				PCT.
	476	676	776	TOTAL	
Cnidaria Actiniaria (Sea Anemones) Unidentified sp.	0	1	2	3	0.06
Platyhelminthes Turbellaria (Flatworms) Unidentified sp.	0	3	0	3	0.06
Nemertinea (Ribbon Worms) Unidentified sp.	25	37	62	124	2.34
Nematoda (Roundworms) Unidentified sp.	25	48	133	206	3.89
Phoronida (Phoronids) Phoronis architecta	2	2	1	5	0.09
Mollusca (Shellfish) Gastropoda (Snails)					
Acteocina canaliculata	1	1	0	2	0.04
Acteocina canaliculata	0	18	24	42	0.79
Caecum floridanum	0	9	20	29	0.55
Caecum imbricatum	0	0	1	1	0.02
Cylindrella bicentata	0	3	11	14	0.26
Diastoma varium	0	0	5	5	0.09
Natica pusilla	0	0	16	16	0.30
Olivella pullula	0	0	11	11	0.21
Olivella mutica	1	0	2	3	0.06
Olivella pusilla	0	3	0	3	0.06
Turbinilla conradi	0	0	10	10	0.19
Turbinilla elegans	0	0	5	5	0.09
Turbinilla sp.	0	0	1	1	0.02
Pelecypoda (Clams)					
Adadara floridana	0	3	22	25	0.47
Chione glauca	0	1	0	1	0.02
Cumingia t. vanhyningi	0	0	1	1	0.02
Diplocreta sp.	0	0	2	2	0.04
Frivilia concentrica	1	15	223	239	4.52
Leptodon sp.	3	0	10	13	0.25
Lucina multilineata	6	35	30	71	1.34
Lucina fadians	1	0	0	1	0.02
Lyonsia h. floridana	0	2	4	6	0.11
Macroura nimbosa	0	0	1	1	0.02
Mactra sp.	0	0	1	1	0.02
Papyridea soleniformis	1	0	0	1	0.02
Parvilucina blanca	1	0	0	1	0.02
Ferimmina margaritacea	1	1	0	2	0.04
Pitae stimpsoni	1	4	5	10	0.19
Semipellucaria	0	0	6	6	0.11
Strigilla microbilis	1	1	22	24	0.45
Tellina texana	0	7	90	97	1.83
Tellina versicolor	13	43	555	611	11.54
Veneridae unidentified sp.	0	9	3	12	0.23
annelida (Segmented Worms)					
Cligypeta					
Unidentified sp.	46	20	31	97	1.83
Polyypeta					
Amphipoda acutifrons	5	0	0	5	0.09
Ampelisca pygmaea	2	5	6	13	0.25

TREASURE ISLAND MOTEL (STATION 1) - CONTROL
(CONTINUED)

SPECIES	NO. OF INDIVIDUALS				
	4/76	6/76	7/76	TOTAL	PCT.
ARMANIA AGILIS	0	1	6	7	0.13
ARMANIA MACULATA	11	7	29	47	0.89
ERANIA CASYCHIS AMERICANA	10	0	0	1	0.02
ERANIA CLAVATA	0	0	1	1	0.02
ERANIA WELLFLEETENSIS	1	3	10	14	0.26
CAPITELLA CAPITATA	0	0	1	1	0.02
CAULIERIELLA SP.	0	0	1	1	0.02
CERATINEREIS MIRABILIS	0	0	3	3	0.06
CHONE SP.	0	1	9	10	0.19
CIOPATRA CUPREA	0	0	2	2	0.04
CISPIC UNCINATA	3	1	0	4	0.08
ENOPLOERANCHUS SANGUINEUS	0	0	1	1	0.02
ETECNE LACTEA	0	5	7	14	0.26
EULALIA SANGUINEA	0	0	1	1	0.02
EXOGNE CISPAR	0	0	1	1	0.02
GLYCERA AMERICANA	1	33	25	59	1.11
GLYCERA CIERANCHIATA	0	0	2	2	0.04
GLYCERA OXYCEPHALA	8	0	0	8	0.15
GLYCERA SP.	0	0	2	2	0.04
GNATICA LITOREA	0	24	17	41	0.77
GRUFELEPIS MEXICANA	0	1	0	1	0.02
GYPTIS VITTATA	0	0	1	1	0.02
HAPLOSCLOPLOS FOLIOSUS	2	4	8	14	0.26
FARMOTICE LUNULATA	0	1	0	1	0.02
ISOLIA PULCHELLA	0	0	0	1	0.02
LUMPFINERIS CRUZENSIS	2	146	940	1088	20.56
LUMPFINERIS TETRAURA	0	5	0	5	0.09
LYSILLA ALBA	1	0	0	1	0.02
MAGELENA RIOJAI	1	0	0	1	0.02
MAGELENA SP.	0	1	6	7	0.13
MEDICASTUS CALIFORNIENSIS	0	0	0	2	0.04
MESOFAETOPTERUS SAGITTARIUS	0	0	35	35	0.66
MYRICCIFELLE SP.	0	0	0	1	0.02
NEANTIES ACUMINATA	1	1	0	1	0.02
NEANTIES SUCCINEA	0	0	0	1	0.02
NEPHIYS BUCERA	0	0	11	15	0.28
NEPHIYS PICTA	48	37	56	141	2.66
NEREIS PELAGICA	1	0	6	7	0.13
NOTOMASTUS HEMIPODUS	0	2	2	4	0.08
NOTOMASTUS LATERIGELIS	0	3	0	3	0.06
ONUPHIS EREMITA OCULATA	3	17	32	52	0.98
ONUPHIS NEBULOSA	2	1	0	3	0.06
VENTIA FUSIFORMIS	7	10	8	25	0.47
PARANAITES SPECIOSA	0	2	0	2	0.04
PARACNIDES LYRA	0	6	3	12	0.23
PARACNIS FUGENS	4	4	10	16	0.34
PARAPRIONOSPID PENNATA	16	0	1	17	0.32
PHYLLODGE ARENAE	5	3	24	32	0.60
PISTA CRISTATA	1	0	0	1	0.02
PISTA PALMATA	0	0	1	1	0.02
POECILOCHAETUS JOHNSONI	0	1	0	4	0.08
POLYDORA TETRABRANCHIA	0	4	0	4	0.08
PRIONOSPID CRISTATA	16	105	205	326	6.16
PRIONOSPID STEENSTRUPI	0	0	11	11	0.21
PSEUCEURYTHOE AMBIGUA	1	0	0	1	0.02
BULLIERINEREIS MEXICANA	0	2	6	6	0.15
SABELLA MICROPHTHALMA	0	0	1	1	0.02
SCOLELEPIS SQUAMATA	0	0	1	2	0.04
SCOLELEPIS TEXANA	0	4	3	5	0.17
SCOLEMUS ARMIGER	0	0	17	18	0.34
TICIN ARENICOLA	0	1	0	1	0.02

TREASURE ISLAND MOTEL (STATION 1) - CONTROL
(CONTINUED)

SPECIES	NO. OF INDIVIDUALS				PCI.
	4/76	6/76	7/76	TOTAL	
<i>SIGANERA BASSI</i>	1	1	5	7	0.13
<i>SPIC FETTIBONEAE</i>	12	1	15	28	0.53
<i>SPICCAETCPIEFUS OCULATUS</i>	4	0	2	6	0.11
<i>SPICPHANES BCBYX</i>	336	40	21	397	7.50
<i>STHENELAIS BCA</i>	1	0	1	2	0.04
 SIPUNCULIDA (PEANUT WORMS)					
<i>GOLFINGIA TRICHOCEPHALA</i>	1	0	1	2	0.04
 ARTHROPODA (CRUSTACEANS)					
AMPHIPODA					
<i>ACANTHCHAUSTICFIUS SP.</i>	1	0	7	8	0.15
<i>AMPELISCA ABDITA</i>	102	1	0	1	0.02
<i>AMPELISCA VERNILLI</i>	2	7	89	98	1.85
<i>ARGISSA SP.</i>	0	0	5	6	0.11
<i>COREPHIUM SP.</i>	0	0	1	1	0.02
<i>CYAMUSA SP.</i>	1	0	0	1	0.02
<i>ERICHTHONIUS SP.</i>	0	0	1	1	0.02
<i>HYPERIA SP.</i>	0	0	1	1	0.02
<i>LEPTIACYLUS SP.</i>	0	1	0	1	0.02
<i>LISTERIELLA SP.</i>	0	1	6	7	0.13
<i>LYSIANOPSIS SP.</i>	0	1	0	1	0.02
<i>MICROPROTOPUS SP.</i>	0	3	0	3	0.06
<i>MONOCULODES SP.</i>	1	25	27	51	0.51
<i>PARAPLOXUS SP.</i>	0	1	1	2	0.04
<i>PROTOSIS SP.</i>	0	1	0	1	0.02
<i>PROTOFAUSTIORIUS SP.</i>	2	0	27	29	0.55
<i>PSELLOHALSTORIUS SP.</i>	1	1	7	9	0.17
<i>PSELLOPLATYISCHNOPUS SP.</i>	56	19	209	284	5.37
<i>SYNCHETIDIUM SP.</i>	19	17	58	94	1.78
<i>TIRON BIOSCELLATUS</i>	0	0	2	2	0.04
<i>TIRON SP.</i>	1	0	0	1	0.02
ANOMURA					
<i>ALBUNEA PARETII</i>	0	1	0	1	0.02
<i>LEPIDOPA WEBSTERI</i>	0	0	3	3	0.06
<i>PAGURUS LONGICARPS</i>	0	0	8	8	0.15
BRACHYURA					
<i>CALLINECTES SP.</i>	0	0	5	5	0.09
<i>HEPATUS EPHELITICUS</i>	0	0	3	3	0.06
<i>LISINA CUBIA</i>	0	0	1	1	0.02
<i>OVALIPES OCCELLATUS</i>	0	0	1	1	0.02
<i>PERSPECTNA P. AQUILONARIS</i>	0	0	1	1	0.02
<i>PINNIXIA CRISTATA</i>	6	0	0	6	0.11
<i>PINNIXIA RETINENS</i>	0	3	8	11	0.21
<i>PINNIXIA SAYANA</i>	0	2	4	6	0.11
CALLIANASSIDAE					
<i>CALLIANASSA JAMAICENSE</i>	0	0	1	1	0.02
CARIDEA					
<i>ALPHEUS HETEROCHAELOS</i>	0	1	0	1	0.02
<i>AMBIXEXTER SYMMETRICUS</i>	0	1	0	1	0.02
<i>HIPPOLYTE PLURICANTHA</i>	0	0	1	1	0.02
<i>LATREUTES PARVULUS</i>	0	0	3	3	0.06
<i>PROCESSA FEMPILLI</i>	0	3	3	6	0.11
<i>PROCESSA VICINA</i>	0	1	0	1	0.02
CUMACEA					
<i>CYCLAPSIS SP.</i>	0	1	6	7	0.13
<i>CYCLAPSIS VARIANS</i>	14	20	26	60	1.13
<i>OXYUROSTYLIS SMITHI</i>	4	11	13	28	0.53
ISOCOPODA					
<i>FOOTFA MCINTOSHA</i>	0	1	4	5	0.09
LEPTOCSTRACA					

TREASURE ISLAND MOTEL (STATION 1) - CONTROL
(CONTINUED)

SPECIES	NO. OF INDIVIDUALS				TOTAL	PCT.
	4/76	5/76	7/76			
<i>NEFELIA SP.</i>	0	0	6	6	0.11	
MYSTACACEA						
<i>PRALIIS FLEXUSSUS</i>	0	1	0	1	0.02	
<i>UNIDENTIFIED SP.</i>	3	1	2	6	0.11	
CSTRACCIA						
<i>HAPL(CY)THERIDEA SEPTIFUNCIATA</i>	0	29	0	29	0.55	
<i>UNIDENTIFIED SP.</i>	0	0	17	17	0.32	
PENAIRES						
<i>SICYDIA TYPICA</i>	0	1	0	1	0.02	
STEREIFODA						
<i>ACANTHOPODILLA BIMINIENSIS</i>	0	1	3	4	0.08	
 ECHINOCEPHALATA						
ASTERIOIDEA (STARFISHES)						
<i>ASIROPECIEN ARIICULAIIS</i>	0	0	1	1	0.02	
ECHINOIDEA (SAND DOLLARS; URCHINS)						
<i>MELLITA QUINQUIESPERFORATA</i>	1	50	123	174	3.29	
HOLCOTHURACIDEA (SEA CUCUMBERS)						
<i>UNIDENTIFIED SP.</i>	0	1	0	1	0.02	
OPHIURCIDEA (BRITTLE STARS)						
<i>OPHICOPHRAGMUS WURDEMANI</i>	0	1	1	2	0.04	
<i>UNIDENTIFIED SP.</i>	0	8	14	22	0.42	
 ENIMICOREATA						
ENTEROPHRENATA (ACORN WORMS)						
<i>UNIDENTIFIED SP.</i>	0	3	0	3	0.06	
 CEPHALOCHOREATA (LANCELETS)						
BRANCHIOPHOREA						
<i>BRANCHIOSICMA ELCRIDAE</i>	0	4	23	27	0.51	
 VERTEBRATA						
FISCHES (FISHES)						
<i>HEMIPIERONOTUS NOVACULA</i>	0	0	1	1	0.02	
 TOTALS	753	951	3589	5293		
NO. SPECIES	67	94	120	166		
NO. IND. PER M ²	1566	1902	7178			
S-W INDEX - H ² (LN)	2.516	3.482	3.084			
EVENNESS - J	0.598	0.766	0.644			
AV. NO. SPECIES	93.7	AV. S-W INDEX	3.027			
AV. NO. IND. PER M ²	3528.7	AV. EVENNESS	0.670			

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
8/10/76

SPECIES	NO. OF IND. (C.)	TOTAL PERCENT	NO. OF IND. (C.)	TOTAL PERCENT
Cnidaria Actiniaria (Sea Anemones) Unidentified sp.	4	0.287	0	0.0
Platyhelminthes Turbellaria (Flatworms) Unidentified sp.	1	0.072	0	0.0
Nemertinea (Ribbon Worms) Unidentified sp.	23	1.650	1	1.235
Nematoda (Roundworms) Unidentified sp.	33	2.367	2	2.469
Mollusca (Shellfish) Gastropoda (Snails)				
Caecum fasciatum	2	0.143	1	1.235
Cylichnella bidentata	1	0.072	0	0.0
Nassarius acutus	1	0.072	0	0.0
Natica pusilla	2	0.143	0	0.0
Olivella pullula	3	0.215	0	0.0
Terebra dislocata	2	0.143	0	0.0
Turbonilla conradi	2	0.143	0	0.0
Pelecypoda (Clams)				
Cumingia tellinoides	3	0.215	0	0.0
Ervilia concentrica	38	2.726	0	0.0
Leptia sp.	7	0.502	0	0.0
Lucina multilineata	8	0.574	0	0.0
Strigilla mirabilis	13	0.933	0	0.0
Tellina tampaensis	1	0.072	0	0.0
Tellina texana	93	6.671	0	0.0
Tellina versicolor	123	8.824	12	14.815
Annelida (Segmented Worms)				
Cligocheta Unidentified sp.	7	0.502	0	0.0
Polychaeta				
Ampharete acutifrons	1	0.072	0	0.0
Armandia maculata	1	0.072	0	0.0
Axiomella mucosa	1	0.072	0	0.0
Branchiella fleetensis	14	1.004	1	1.235
Caullerielia sp.	1	0.072	1	1.235
Chone sp.	1	0.072	0	0.0
Eteone lactea	4	0.287	1	1.235
Glycera americana	6	0.430	1	1.235
Glycera sp.	2	0.143	0	0.0
Spiralis litoraea	0	0.0	1	1.235
Glyptis vitata	0	0.0	1	1.235
Haplosclopex foliosus	2	0.143	0	0.0
Paraphoxus lunulata	1	0.072	0	0.0
Loimia medusa	1	0.072	0	0.0
Lumefineris cruzensis	669	47.991	38	46.914
Pagelina sp.	1	0.072	0	0.0
Mesactopterus sagittarius	2	0.143	0	0.0
Neanthes acuminata	2	0.143	0	0.0
Nephtys buera	1	0.072	0	0.0
Nephtys picta	5	0.359	0	0.0
Onupis eremita oculata	9	0.646	0	0.0
Onupis nebulosa	11	0.789	4	4.938
Paranaitis speciosa	5	0.359	0	0.0

TREASURE ISLAND MOTEL (STATIC 1) - CONTROL AND EXPERIMENTAL

6/10/76
(CONTINUED)

SPECIES	NO. CF IND. (C.)		NO. CF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
PHYLLOPODIA ARENAE	5	0.359	0	0.0
PRIONOSPIS CRISTATA	69	4.950	0	0.0
RULLIERINERIA MEXICANA	2	0.215	1	1.235
SCOLOPLECS ARMIGER	14	1.004	5	6.173
STIGAMERA BASSI	5	0.359	0	0.0
STO PETTIBONEAE	2	0.143	0	0.0
STIOPHANES BOMBYX	7	0.502	0	0.0
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
ACANTHOHAUSTORIUS SP.	1	0.072	0	0.0
AMPELISCA VERRILLI	3	0.215	0	0.0
COROPHIDIUM SP.	1	0.072	0	0.0
MICRERPOTOPUS SP.	1	0.072	0	0.0
MONOCLOODES SP.	5	0.359	0	0.0
PROTCHALISTRILLS SP.	15	1.076	4	4.938
PSEUDCHAUSTORIUS SP.	8	0.574	1	1.235
PSEUDOCERATIUS SCHINCPUS SP.	74	5.308	1	1.235
SYNCHELIDIUM SP.	10	0.717	0	0.0
BRACHYURA				
VALIPES OCELLATUS	1	0.072	0	0.0
PINNIXIA RETINENS	3	0.215	0	0.0
CARIDEA				
PROCESSA MEMPHILLI	2	0.143	0	0.0
UNIDENTIFIED SP.	2	0.143	0	0.0
CLIMACEA				
CYCLAPSIS SP.	4	0.287	0	0.0
CYCLAPSIS VARIANS	5	0.359	0	0.0
CYANOCYANIS SMITHI	1	0.072	0	0.0
ISOPODA				
EDOTEA MONTOSA	3	0.215	0	0.0
MYSIDACEA				
UNIDENTIFIED SP.	1	0.072	0	0.0
OSTRACODA				
UNIDENTIFIED SP.	12	0.861	0	0.0
FENACEA				
SICSYNIA TYPICA	0	0.0	1	1.235
ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
ASTROPECIEN ARTICULATUS	1	0.072	0	0.0
ECHINOIDEA (SAND DOLLARS; URCHINS)				
MELLITA QUINQUEPUNCTATA	14	1.004	2	2.469
OPHTHURIDEA (BRITTLE STARS)				
OPHTHURAGMUS WUEDEMANNI	1	0.072	0	0.0
HEMICHORDATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	2	0.143	0	0.0
CEPHALOCHORDATA (LANCELETS)				
FRANCISIOMA FLORIDAE	12	0.861	2	2.469
TOTALS	1394		81	
NO. SPECIES	72		20	
NO. IND. PER M ²	5576		324	
S-W INDEX - H'(LN)	2.3604		2.0322	
EVENNESS - J	0.5519		0.6764	

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
8/18/76

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	3	0.218	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	8	0.582	0	0.0
NEMERTINEA (RIBBED WORMS)				
UNIDENTIFIED SP.	33	2.400	3	1.230
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	59	4.291	3	1.230
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTEUSCIA CANDEI	1	0.073	0	0.0
NATICA PUSILLA	3	0.218	0	0.0
CLIVILLA BULLULA	5	0.364	0	0.0
TURBINILLA CONRADII	1	0.073	0	0.0
PELECYPODA (CLAMS)				
ERVILIA CENGENIBRISA	17	1.236	0	0.0
LEPTILIA SP.	4	0.291	0	0.0
LUCINA MORTILINIFATA	11	0.800	0	0.0
PAPYRIFERA SOLENIFORMIS	1	0.073	0	0.0
PERIPLOMA MARGARIACEUM	2	0.145	0	0.0
PITAE SIMPSONI	2	0.145	3	1.230
STICCIILLA MIRABILIS	13	0.945	0	0.0
TELLINA TEXANA	55	4.000	2	0.820
TELLINA VERSICOLOR	79	5.745	18	7.377
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	15	1.091	0	0.0
ECOLYCHAETA				
AMPHAREIA ACTIIFCNS	1	0.073	0	0.0
APOPENICSEIC PYGMAEA	0	0.0	1	0.410
ARMANDIA MACULATA	12	0.873	1	0.410
BRANIA WELLFLEETENSIS	9	0.655	0	0.0
CAPITELLA CAPITATA	1	0.073	0	0.0
CAPITELLIDES JONESI	1	0.073	1	0.410
CAPITELLIDA SP.	1	0.073	0	0.0
CERATINEELIS IRRITABILIS	7	0.509	1	0.410
CHONE SP.	3	0.218	0	0.0
CIOPATRA CUPREA	1	0.073	1	0.410
CLYCNE LACTEA	2	0.145	1	0.410
EXOGONE DISPAR	1	0.073	0	0.0
FLABELLIGERA SP.	1	0.073	0	0.0
GLYCERA AMERICANA	3	0.218	0	0.0
GLYCERA DIBRANCHIAIA	6	0.436	0	0.0
GLYCERA SP.	4	0.291	0	0.0
CONIAEA LITOREA	1	0.073	0	0.0
CAPITECOLOPLOS FOLIOSIS	0	0.0	0	0.0
CARMOTHOE LUNULATA	1	0.073	0	0.0
LUMINETIS CRUZENSIS	499	36.291	113	46.311
MAGELCNA SP.	1	0.073	0	0.0
NEOCOELOPTERUS SAGILLARILIS	4	0.291	0	0.0
NEPHIUS BUCERA	1	0.073	0	0.0
NEPHIUS PICTA	5	0.655	0	0.0
ONUPHIS EREMITIA OCULATA	0	0.0	1	0.410

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 8/18/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
<i>ONUPIS NEBULOSA</i>	7	0.509	0	0.0
<i>PARANITES SPECIOSA</i>	1	0.073	0	0.0
<i>PARACNICES LYRA</i>	0	0.0	2	C.820
<i>PARACNIS FULGENS</i>	1	0.073	0	0.0
<i>PARAPRIONOSPIG PINNATA</i>	1	0.073	2	C.820
<i>PHYLLOCOCCE ARENAE</i>	3	0.218	2	C.820
<i>POLYDORA TETRABRANCHIA</i>	1	0.073	1	C.410
<i>PRIONOSPIG CRISTATA</i>	200	14.545	43	17.623
<i>RULLIERINEREIS MEXICANA</i>	4	0.291	0	0.0
<i>SCOLOPICS ARMIGER</i>	30	2.182	7	2.869
<i>SIGALIUM ARENICOLA</i>	2	0.145	0	0.0
<i>SIGAMERA BASSI</i>	9	0.655	0	0.0
<i>SPIO PETTIBONEAE</i>	6	0.436	0	0.0
<i>SPIOPHANES BOMBYX</i>	5	0.364	0	0.0
 SIPLOCULICA (PEANUT WORMS)				
<i>GOLFINGIA TRICHOCEPHALA</i>	1	0.073	1	C.410
 ARTHROPODA (CRUSTACEANS)				
<i>AMPHIPODA</i>				
<i>ACANTHOPODISTORISUS SP.</i>	12	0.873	0	0.0
<i>AMPELISCA ADDITA</i>	3	0.218	1	C.410
<i>AMPELISCA VERRILLI</i>	15	1.091	3	1.230
<i>ARGISIA SP.</i>	2	0.145	0	0.0
<i>MONOCILLOCOE SP.</i>	0	0.0	1	0.410
<i>PROTOHALISTORIS SP.</i>	15	1.051	0	0.0
<i>PSEUDOHALISTORIS SP.</i>	6	0.436	0	0.0
<i>PSEUDOPLATYTECHNOPSIS SP.</i>	45	3.564	4	1.639
<i>SYNCELIUM SP.</i>	13	0.945	1	0.410
<i>BRACHYURA</i>				
<i>CALLINECTES SP.</i>	1	0.073	0	0.0
<i>PINNIXIA RETINENS</i>	5	0.364	0	0.0
<i>CALLIANASSIDAE</i>				
<i>CALLIANASSA JAMAICENSIS</i>	0	0.0	3	1.230
<i>CARIDEA</i>				
<i>ERGESSA FEMPILLI</i>	7	0.509	0	0.0
<i>ERGESSA VICINA</i>	3	0.218	1	C.410
<i>CUMACEA</i>				
<i>CYCLAPsis SP.</i>	5	0.364	0	0.0
<i>CYCLAPsis VARIANS</i>	12	0.873	4	1.639
<i>OXYUROSTYLIS SMITHI</i>	7	0.509	5	2.049
<i>LEPTOSTRACA</i>				
<i>NEBALIA SP.</i>	1	0.073	1	0.410
<i>MYSTACEA</i>				
<i>UNIDENTIFIED SP.</i>	2	0.145	1	C.410
<i>OSTRACODA</i>				
<i>UNIDENTIFIED SP.</i>	10	0.727	2	C.820
<i>PENAEIDA</i>				
<i>SICYCNIA BREVIROSTRIS</i>	0	0.0	1	C.410
<i>STOMATOPODA</i>				
<i>ACANTHOSQUILLA BIMINIENSIS</i>	0	0.0	1	C.410
 ECHINODERATA				
<i>ASTEROIDEA (STARFISHES)</i>				
<i>ASTROPECTEN ARTICULATUS</i>	1	0.073	0	0.0
<i>ECINODICEA (SAND DOLLARS; URCHINS)</i>				
<i>MELLIA CLINGLIESPERFORATA</i>	15	1.091	0	0.0
<i>MOLTHURIDAE (SEA CUCUMBERS)</i>				
<i>LEPTOCYNAPIA SP.</i>	2	0.145	0	0.0
<i>OPHTHURIDAE (BRITTLE STARS)</i>				
<i>OPHMICHRAGMUS MURDEMANI</i>	1	0.073	0	0.0

APPENDIX B (CONTINUED)

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
8/18/76
(CONTINUED)

SPECIES	NO. CF IND. (C.) TOTAL	PERCENT	NO. CF IND. (E.) TOTAL	PERCENT
UNIDENTIFIED SP.	2	0.145	0	0.0
HEMICHEC DATA ENTEROPNEUSTA (ACORN WORMS) UNIDENTIFIED SP.	1	0.073	0	0.0
CEPHALOCHEC DATA (LANCELETS) BRANCHICISTOMA FLORIDAE	32	2.327	0	0.0
VERTEBRATA PISCES (FISHES) SYNTHETUS SP.	1	0.073	0	0.0
TOTALS	1375		244	
NO. SPECIES	80		38	
NO. IND. FER M2	5500		576	
S-W INDEX - H'(LN)	2.7517		2.1746	
EVENNESS - J	0.6280		0.5578	

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
8/24/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA ACTINISIA (SEA ANEMONES) UNIDENTIFIED SP.	3	0.248	1	0.187
PLATYHELMINTHES TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	6	0.496	2	0.375
NEMERTINFA (RIBBON WORMS) UNIDENTIFIED SP.	25	2.068	9	1.685
NEMATODA (EUCUNIFORMS) UNIDENTIFIED SP.	16	1.323	1	0.187
BRACHIOPODA (LAMP SHELLS) GLCIIDIA PYRAMICA	0	0.0	1	0.187
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTECCINA CANDEI	3	0.248	0	0.0
NATICA PISILLA	1	0.083	0	0.0
OLIVELLA BULLULA	1	0.083	0	0.0
PELECYPODA (CLAMS)				
ANADARA FLORIDANA	1	0.083	0	0.0
CARDIUMA COSTELLATA	0	0.0	1	0.187
ERVILIA CONCENTRICA	42	3.474	0	0.0
LEPTIN. SP.	1	0.083	4	0.749
LUCINA PULLILINEATA	9	0.744	1	0.187
PAPYRIDEA SOLENIFORMIS	2	0.165	0	0.0
PERIPLUMA MARGARITACEUM	1	0.083	1	0.187
PITAE SIMPSONI	27	2.233	0	0.0
STRIGILLA MIRABILIS	14	1.158	1	0.187
TELLINA TAMPAENSIS	2	0.165	0	0.0
TELLINA TEXANA	21	1.737	9	1.685
TELLINA VERSTICCLOR	78	6.452	23	4.307
VENEFIDAE UNIDENTIFIED SP.	6	0.496	0	0.0
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	17	1.406	2	0.375
POLYCHAETA				
APOREICNSIS PYGMAEA	1	0.083	0	0.0
ARENICLLA CRISTATA	1	0.083	0	0.0
ARMANDIA MACULATA	9	0.744	9	1.685
AXIODHELLA NUCOSA	2	0.165	0	0.0
BRANIA WELLFLEETENSIS	7	0.579	0	0.0
CERATINEPEIS IRRITABILIS	6	0.496	7	1.311
CHCNE SP.	9	0.744	0	0.0
DIDOPATRA CUPREA	1	0.083	2	0.375
ETECHE LACTEA	7	0.579	4	0.749
EULALIA SANGUINEA	1	0.083	1	0.187
GLYCERA AMERICANA	4	0.331	1	0.562
GLYCERA DIERANCHIATA	3	0.248	1	0.187
GLYCERA SP.	3	0.248	2	0.375
GLYCINE SOLITARIA	0	0.0	1	0.187
CONICAFALLOTOREA	7	0.579	1	0.187
GYPSIS VITIATA	1	0.083	0	0.0
MABELLOCOLOPLOS FOLIOSUS	1	0.083	0	0.0
ISOLELLA PULCHELLA	1	0.083	0	0.0
LUMINESCENS CRUZENSIS	476	39.371	170	31.835

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 8/24/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
<i>HALACCERUS INCICUS</i>	0	0.0	1	0.187
<i>MESOCHAEIPTERUS SAGITTARIUS</i>	11	0.910	13	2.434
<i>NEPHYS PICTA</i>	12	0.993	1	0.187
<i>NOTEPASUS LATERICEUS</i>	2	0.165	0	0.0
<i>CHUPHIS EREMITA CCULATA</i>	34	2.812	3	0.562
<i>ONUPHIS NEBULOSA</i>	2	0.165	2	0.375
<i>OWENIA FUSIFORMIS</i>	4	0.331	0	0.0
<i>PARANITES SPECIOSA</i>	3	0.248	1	0.187
<i>PARACNUS LYRA</i>	2	0.165	0	0.0
<i>PARACNUS FULGENS</i>	2	0.165	1	0.187
<i>PARAPRIONOSPIS PINNATA</i>	1	0.083	2	0.375
<i>PHYLLODOCE ARENAE</i>	4	0.331	6	1.124
<i>POLYDORA TETRABRANCHIA</i>	1	0.083	0	0.0
<i>PRIONOSPIS CRYSTATA</i>	101	8.354	114	21.348
<i>RULLIERINERETIS MEXICANA</i>	15	1.241	1	0.187
<i>SCOLOPLOCS ARMIGER</i>	39	3.226	21	3.933
<i>SCOLOPLOCS RUBRA</i>	0	0.0	1	0.187
<i>SIGALION ARENICOLA</i>	1	0.083	0	0.0
<i>SIGAMERA BASSI</i>	2	0.165	0	0.0
<i>SPIOT PETTIBONEAE</i>	12	0.993	19	3.558
<i>SPIOCHEIPTERUS OCULATUS</i>	2	0.165	0	0.0
<i>SPIOPHANES BOMBYX</i>	5	0.414	1	0.187
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<i>ACANTHOHAUSTORIUS SP.</i>	0	0.0	1	0.187
<i>AMPELISCA AEDITA</i>	1	0.083	1	0.187
<i>AMPELISCA VERRILLI</i>	31	2.564	27	5.056
<i>CISTRICELLA SP.</i>	1	0.083	0	0.0
<i>MONOCULODES SP.</i>	1	0.083	0	0.0
<i>PROTOHAUSTORIUS SP.</i>	4	0.331	1	0.187
<i>PSEUDOHALSTORIUS SP.</i>	1	0.083	1	0.187
<i>PSEUDOPLATYI SCHNOPIUS SP.</i>	8	0.662	31	5.805
<i>SYNHELIDILM SP.</i>	4	0.331	1	0.187
ANOMURA				
<i>ALBINEA PARELLI</i>	1	0.083	1	0.187
<i>BETROCHIRIS OTOGENES</i>	0	0.0	1	0.187
<i>PETROLISTHES GALATHINUS</i>	0	0.0	1	0.187
BRACHYTRA				
<i>CALLINECTES SP.</i>	2	0.165	0	0.0
<i>HEPATIS EPHELIUS</i>	1	0.083	0	0.0
<i>PINNIXIA RETINENS</i>	0	0.0	1	0.187
CARIDEA				
<i>OYPIACES LIMICOLA</i>	1	0.083	0	0.0
<i>CUPACEA</i>				
<i>CYCLAPESIS SP.</i>	10	0.827	1	0.187
<i>CYCLAPESIS VARIANS</i>	3	0.248	2	0.375
<i>CYXEOSTYLIS SMITHI</i>	16	1.323	3	0.562
ISOPODA				
<i>EDOJEA MONIOSA</i>	3	0.248	0	0.0
LEPTOSTRACA				
<i>NEBALIA SP.</i>	2	0.165	1	0.187
OSTRACODA				
<i>UNIDENTIFIED SP.</i>	13	1.075	1	0.187
PENAEIDA				
<i>PENAEUS GUARARUM</i>	0	0.0	1	0.187
STOMATOPODA				
<i>ACANTHOSQUILLA BIMINIENSIS</i>	1	0.083	0	0.0
ECHINODERMATA				
ASTEROIDEA (STARFISHES)				

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 8/24/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF INF. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
ASTROPECTEN ARTICULATLS	1	0.083	0	0.0
ECHINOICEA (SAND DOLLARS; URCHINS)				
NELLIA QUINQUIESPERFORATA	6	0.496	0	0.0
HCLOTURCOIDEA (SEA CUCUMBERS)				
LEPIOSYNAPTA SP.	5	0.744	1	0.187
OPHIURCIDEA (BRITTLE STARS)				
OPHICPHRAGMUS WURDEMANI	2	0.165	0	0.0
UNIDENTIFIED SP.	5	0.414	1	0.187
HEMICORDATA				
ENTEROPNEUSTA (ACRION WORMS)				
UNIDENTIFIED SP.	2	0.165	0	0.0
CEPHALOCHORDATA (LANCETTS)				
BRANCHIOSIGMA FLORIDAE	5	0.744	11	2.060
VERTEBRATA				
PISCES (FISHES)				
LEPOPTERIDUM GRAELSSI	0	0.0	1	0.187
TOTALS	1209		534	
NO. SPECIES		24		60
NO. IND. PER M ²		4836		2136
S-D INDEX - H ² (LN)		2.8449		2.5827
EVENNESS - J		0.6421		0.6308

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
9/1/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDA IA ACANTHARIA (SEA ANEMONES) UNIDENTIFIED SP.	1	0.130	0	0.0
PLATYHELMINTHES TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	5	0.649	1	0.248
NEMERTINA (RIBBED WORMS) UNIDENTIFIED SP.	20	2.597	7	1.737
NEMATODA (ROUNDWORMS) UNIDENTIFIED SP.	10	1.299	1	0.248
MOLLUSCA (SHELLFISH) GASTROPODA (SNAILS) NATICA PUSILLA	5	0.649	0	0.0
OLIVELLA PULLULA	1	0.130	0	0.0
TEREEFA DISLOCATA	2	0.260	0	0.0
TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	1	0.130	0	0.0
PELECYPODA (CLAMS) ERYVILLA CONCENTRICA	30	3.896	1	0.248
LEPTILA SP.	0	0.0	4	0.993
LUCINA MILLERLINEATA	11	1.429	0	0.0
LYCNSIA H. FLORIDANA	3	0.390	0	0.0
PAPYFIDEA SOLENIFERMIS	1	0.130	0	0.0
PITAE SINIFERAI	1	0.130	0	0.0
SEMELE PROFICUA	4	0.519	3	0.744
STRIGILLA MIRABILIS	17	2.208	0	0.0
TELLINA IRIS	0	0.0	1	0.248
TELLINA VERSICOLOR	58	7.532	32	7.940
ANNELIDA (SEGMENTED WORMS) OLIGOCHAETA UNIDENTIFIED SP.	16	2.076	2	0.496
POLYCHAETA APERTICARIA PYGMAEA	1	0.130	0	0.0
ARICIDEA VASSI	1	0.130	0	0.0
ARMADILLA MACULATA	2	0.260	0	0.0
AXICHELLA MUCCA	2	0.260	0	0.0
BRANCHICIASYCHIS AMERICANA	1	0.130	0	0.0
BRANIA BELLEFLEETENSIS	3	0.390	1	0.248
CERATINNEFIS TERRABILIS	16	2.078	14	3.474
CHAETOCERUS GAYHEACIA	1	0.130	0	0.0
CHONE SP.	6	0.779	3	0.744
CISTERNIDES GULDII	1	0.130	0	0.0
ETEONE LACTEA	1	0.130	3	0.744
GLYCEEA CIBRANCHIATA	3	0.390	1	0.248
GLYCEEA SP.	2	0.260	0	0.0
GNOMIA LITOREA	3	0.390	2	0.496
HAPLOCYCLOPS FRAGILIS	4	0.519	0	0.0
LUMBRINERIS CRUZENSIS	283	36.753	207	51.365
MESOCYCLOPS SAGILLARIUS	8	1.039	7	1.737
NEANTIDES ACUMINATA	2	0.260	0	0.0
NEANTIDES SUCCINEA	3	0.390	0	0.0
NEPHYTIS EUCERA	1	0.130	1	0.248
NEPHYTIS PIZZA	17	2.208	2	0.744
CNEMIDIA EREMITA OCULATA	17	2.208	3	0.744
LEPTIJA FUSIFORMIS	1	0.130	0	0.0
PARACINIDES LYRA	1	0.130	1	0.248

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 9/1/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<i>PARAPFICNCSPIC PINNATA</i>	2	0.260	3	0.744
<i>PISTA PALMATA</i>	0	0.0	1	0.248
<i>ECCIOLOCAETUS J. DUNSONI</i>	0	0.0	2	0.496
<i>PRICKNSPIG CRISTATA</i>	32	4.156	37	5.181
<i>FULLERINERIS MEXICANA</i>	21	2.727	9	2.233
<i>SCOLELEPIS TEXANA</i>	1	0.130	0	0.0
<i>SCOLELEPIS ARMIGER</i>	50	6.494	17	4.218
<i>SIGAMERA TENTACULATA</i>	0	0.0	2	0.744
<i>SPIC PETTIGONEAE</i>	17	2.208	1	0.248
<i>SPIOCHAEOPTERUS OCULATUS</i>	3	0.390	0	0.0
<i>SPICIFANES BOMBYX</i>	6	0.779	2	0.496
 SIPUNCULICA (PEANLT WCRMS)				
<i>SOLENGIA TRICHOCEPHALA</i>	1	0.130	0	0.0
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<i>ACANTHOCAUSTORIUS SP.</i>	9	1.169	0	0.0
<i>AMPELISCA ABDITA</i>	1	0.130	0	0.0
<i>AMPELISCA VERRILLI</i>	13	1.688	7	1.737
<i>CORONIUM SP.</i>	1	0.130	0	0.0
<i>MONOCLOIDES SP.</i>	0	0.0	4	0.993
<i>PROTOMALASTORIUS SP.</i>	3	0.390	0	0.0
<i>PSEUCOHALASTORIUS SP.</i>	4	0.519	0	0.0
<i>PSEUCOPLATYPSCHNOPIIS SP.</i>	2	0.260	3	0.744
<i>SYNCFELIDIUM SP.</i>	2	0.260	0	0.0
ANOMURA				
<i>ALBIDEA PARETTI</i>	1	0.130	0	0.0
BRACHYURA				
<i>CALLIPECTES SP.</i>	2	0.260	0	0.0
<i>PINNIXIA RETINENS</i>	1	0.130	0	0.0
CALLIANASSIDAE				
<i>CALLIANASSA JAMAICENSE</i>	2	0.260	0	0.0
CARTIDA				
<i>LATHUTES PARVULUS</i>	1	0.130	0	0.0
<i>PROCTOSA VICINA</i>	1	0.130	0	0.0
CLINACEA				
<i>CYCLAPSIS VARIANS</i>	1	0.130	2	0.496
<i>OXYURDINIS SIMILI</i>	2	0.260	4	0.993
MYSTACACEA				
UNIDENTIFIED SP.	0	0.0	4	0.993
OSTRACODA				
UNIDENTIFIED SP.	6	0.779	4	0.993
STOMATOPODA				
<i>ASANIFOSSVILLA BIMINIENSIS</i>	2	0.260	0	0.0
 ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
<i>ASIPROPECIEN ARICULATIS</i>	1	0.130	0	0.0
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<i>MELITIA QUINQUEPERFORATA</i>	3	0.390	0	0.0
HOLOTHURIOIDEA (SEA CUCUMBERS)				
<i>LEPTOCYANIA SP.</i>	1	0.130	2	0.496
OPHTHURICETEA (BRITTLE STARS)				
<i>OPHTHURICETEA (BRITTLE STARS)</i>	4	0.519	0	0.0
 HEMICHRICATA				
ENTEROPHRELSA (ACORN WORMS)				
UNIDENTIFIED SP.	4	0.519	0	0.0
 CEPHALOCHIRICATA (LANCLETS)				

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
9/1/76
(CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL PERCENT	NO. OF IND. (E.) TOTAL PERCENT
<u>BRANCHIOSOMA FLORIDAE</u>	4 0.519	0 0.0
TOTALS	770	403
NO. SPECIES	74	38
NO. IND. PER 42	3080	1612
S-W INDEX - H ² (LN)	2.8922	2.1365
EVENNESS - J	0.6720	0.5873

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
9/8/76

SPECIES	NO. OF IND.	TOTAL PERCENT	NO. OF IND.	TOTAL PERCENT
CNIDARIA ACTINIANARIA (SEA ANEMONES) UNIDENTIFIED SP.	4	0.708	0	0.0
PLATYHELMINTHES TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	1	0.177	0	0.0
NEMERTINEA (RIBBON WORMS) UNIDENTIFIED SP.	23	4.071	6	1.786
NEMATODA (ROUNDWORMS) UNIDENTIFIED SP.	4	0.708	0	0.0
MOLLUSCA (SHELLFISH) GASTROPODA (SNAILS)				
ACTECCINA CANDEI	2	0.354	0	0.0
CYLICHNELLA BIDENTATA	1	0.177	1	0.298
NATICA PISILLA	2	0.354	1	0.298
OLIVELLA BULLULA	1	0.177	0	0.0
PELECYPODA (CLAMS)				
ERVILIA CONCENTRICA	12	2.124	1	0.298
LEPTIN SP.	1	0.177	2	0.595
LUCINA MULTILINEATA	17	3.009	0	0.0
PAPYRIDEA SOLENIFERMIS	1	0.177	0	0.0
PERIPLOMA MARGARITACEUM	6	1.062	0	0.0
PISTAR SIMPSONI	1	0.177	0	0.0
SEMELE PROFICUA	2	0.354	1	0.298
STRIGILLA MIRABILIS	3	0.531	0	0.0
TELLINA IRIS	0	0.0	1	0.298
TELLINA TEXANA	0	0.0	9	2.679
TELLINA VERSICOLOR	37	6.549	15	4.464
VENEFICIA UNIDENTIFIED SP.	3	0.531	1	0.298
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	10	1.770	1	0.298
POLYCHAETA				
APOPOEUM SPIC PYGMAEA	1	0.177	4	1.190
ARICIDEA SP.	1	0.177	0	0.0
ARMANDIA AGILIS	0	0.0	2	0.595
ARMANDIA MACULATA	3	0.531	1	0.298
AXICHELLEA MUCOSA	1	0.177	0	0.0
ERANIA NELLIEFESTENSIS	1	0.177	0	0.0
CAPITELLIDES JONESI	1	0.177	0	0.0
CERATINEAEIS IRRITABILIS	18	3.186	11	3.274
CERATINEAEIS MIRABILIS	1	0.177	2	0.595
CHAETOCERUS GAYHEADIA	3	0.531	0	0.0
CHOCNE SP.	5	0.885	0	0.0
CISTERNIIDES GULDII	4	0.708	0	0.0
EUTEONE LACTEA	1	0.177	0	0.0
EULALIA SANGUINEA	1	0.177	0	0.0
GLYCEFA LIFRANCHIATA	5	0.885	1	0.298
GONIOPALIUS TORREA	15	2.655	1	0.298
LAPLASCLOPLCS ROBUSTUS	1	0.177	0	0.0
MARMATIFCE LUNULATA	1	0.177	0	0.0
ISOLIA PULCHELLA	2	0.354	0	0.0
LUMPFINERIS CRUZENSIS	150	26.549	112	32.333
LUMPFINERIS TETRAURA	3	0.531	0	0.0
PAGELINA SP.	3	0.531	0	0.0

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL

9/8/76
(CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
<i>MEDICMASTUS CALIFORNIENSIS</i>	3	0.531	0	0.0
<i>MESOCYAETOPTERUS SAGITTARIUS</i>	4	0.708	1	0.298
<i>NEANTES SUCCINEA</i>	0	0.0	2	0.595
<i>NEPHIYS PICTA</i>	15	2.655	1	0.298
<i>NOTCMASTUS HEMIPODUS</i>	0	0.0	1	0.298
<i>NOTOMASTUS LATERICEUS</i>	3	0.531	0	0.0
<i>ONUPIS EREMITA OCULATA</i>	28	4.956	14	4.167
<i>ONUPIS NEBULOSA</i>	1	0.177	0	0.0
<i>OWENIA FUSIFORMIS</i>	2	0.354	0	0.0
<i>PARANAITES SPECIOSA</i>	1	0.177	1	0.298
<i>PARACNIDES LYRA</i>	9	1.593	0	0.0
<i>PARACNIDES FULGENS</i>	1	0.177	0	0.0
<i>PARAFRIONOSPIS PINNATA</i>	4	0.708	9	2.679
<i>PHYLLODOCE ARENAE</i>	10	1.770	8	2.381
<i>POECILOCHAETUS JCHNSONI</i>	0	0.0	2	0.595
<i>PRIONOSPIS CRISTATA</i>	17	3.009	26	7.738
<i>RULLIERINEREA MEXICANA</i>	19	3.363	16	4.762
<i>SCOLELOPODS ARMIGER</i>	22	3.894	33	5.821
<i>SIGALICK ARENICOLA</i>	2	0.354	0	0.0
<i>SIGAPERA BASSI</i>	1	0.177	0	0.0
<i>SIGAPERA TENTACULATA</i>	2	0.354	0	0.0
<i>SPIC FETTIBONEAE</i>	1	0.177	14	4.167
<i>SPICCHAETOPTERUS OCULATUS</i>	0	0.0	1	0.298
<i>SPICHEMIS BOMBYX</i>	8	1.416	7	2.083
 <i>SIPUNCULICA</i> (PEANLT WORMS)				
<i>GOLFINGIA TRICHOCEPHALA</i>	2	0.354	0	0.0
 ARTHROPODA (CRUSTACEANS)				
<i>AMPHIPODA</i>				
<i>AMPELISCA ABDITA</i>	1	0.177	1	0.298
<i>AMPELISCA VERRILLI</i>	2	0.354	4	1.190
<i>ARGISSA SP.</i>	0	0.0	1	0.298
<i>COROPHIOUM SP.</i>	0	0.0	1	0.298
<i>MONOCULODES SP.</i>	2	0.354	0	0.0
<i>PARAPHOXUS SP.</i>	2	0.354	0	0.0
<i>PSEUDOPLATYTSCHNODUS SP.</i>	1	0.177	1	0.298
<i>SYNCFELICUM SP.</i>	3	0.531	0	0.0
<i>ANOMURA</i>				
<i>ALPNEA PARELLI</i>	1	0.177	2	0.595
<i>ERACHYURA</i>				
<i>PINNIXIA RETINENS</i>	1	0.177	0	0.0
<i>CARIDEA</i>				
<i>PROCESSA MEMPHILLI</i>	3	0.531	0	0.0
<i>PROCESSA VICINA</i>	3	0.531	0	0.0
<i>CUNACEA</i>				
<i>CYCLAPSIS SP.</i>	6	1.062	1	0.298
<i>CYCLAPSIS VARIANS</i>	2	0.354	1	0.298
<i>CYXEOSTYLIS SMITHI</i>	5	0.885	4	1.190
<i>LEPTOSTRACA</i>				
<i>NEBALIA SP.</i>	3	0.531	1	0.298
<i>mysidacea</i>				
<i>UNIDENTIFIED SP.</i>	3	0.531	0	0.0
<i>OSTRACCA</i>				
<i>UNIDENTIFIED SP.</i>	5	0.885	1	0.298
<i>PENAEIDAE</i>				
<i>PENAEIS DUCRAFUM</i>	1	0.177	0	0.0
<i>TRACHYPENAEUS CONSIDICIUS</i>	1	0.177	2	0.595
<i>TANAIIDACEA</i>				
<i>UNIDENTIFIED SP.</i>	1	0.177	0	0.0
 ECHINODERMATA				

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 5/8/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
HOLOTHIROIDEA (SEA CUCUMBERS) <u>LEPTICSYNAPTA</u> SP.	10	1.770	0	0.0
HEMICHERDATA ENTEROPNEUSTA (ACORN WORMS) UNIDENTIFIED SP.	1	0.177	0	0.0
CEPHALOCHERDATA (LANCELETS) <u>BRANCHIOSTOMA FLORIDAE</u>	1	0.177	7	2.083
TOTALS	565		336	
NO. SPECIES		83		47
NO. IND. PER M ²		2260		1344
S-W INDEX - H ² (LN)		3.3627		2.7387
EVENNESS - J		0.7610		0.7113

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
9/21/76

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
CNIDARIA				
ACTINIANIA (SEA ANEMONES)				
UNIDENTIFIED SP.	2	0.256	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	1	0.128	1	0.433
NEMERTINEA (RIBBED WORMS)				
UNIDENTIFIED SP.	21	2.685	7	3.030
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	9	1.151	0	0.0
PHORONIDA (PHORONIDS)				
<u>PHORONIS ARCHIECTIA</u>	2	0.256	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
<u>CYLICHNELLA BIDENTATA</u>	0	0.0	1	0.433
<u>NATICA FISILLA</u>	3	0.384	0	0.0
<u>CLIVELLA BULLULA</u>	3	0.384	1	0.433
PELECYPODA (CLAMS)				
<u>ANADARA FLORIDANA</u>	1	0.128	0	0.0
<u>ERVILIA CONCENTRICA</u>	3	0.384	0	0.0
<u>LAEVICARDIUM PICTUM</u>	1	0.128	0	0.0
<u>LUCINA MULTILINEATA</u>	3	0.384	3	1.299
<u>STRIGILLA MIRABILIS</u>	5	0.639	0	0.0
<u>TELLINA IRIS</u>	4	0.512	3	1.299
<u>TELLINA TEXANA</u>	6	1.023	0	0.0
<u>TELLINA VERSICOLOR</u>	31	3.964	16	6.926
ANNELIDA (SEGMENTED WORMS)				
CLIGGCHAETA				
UNIDENTIFIED SP.	15	1.918	0	0.0
PELYCHAETA				
AMPHARETE ACUTIFRONS	1	0.128	0	0.0
APORTIONOSPIS PYGMAEA	0	0.0	3	1.299
ARICIDEA FRAGILIS	1	0.128	0	0.0
ARICIDEA SP.	2	0.256	0	0.0
ARMANDIA AGILIS	2	0.256	0	0.0
ARMANDIA MACULATA	3	0.384	0	0.433
AXIOIMELLA MUCOSA	1	0.128	0	0.0
BRANIA BELLEFLEETENSIS	2	0.256	0	0.0
CAPIJELLA CAPITATA	0	0.0	8	3.463
CAULIMERELLA SP.	2	0.256	0	0.0
CERATINERESIS IRRITABILIS	17	2.174	7	3.030
CERATINERESIS PIRABILIS	2	0.256	0	0.0
CHAETIUMNE GAYHEADIA	1	0.128	0	0.0
CHONE SP.	17	2.174	1	0.433
CTSTERIDES GULDII	1	0.128	0	0.0
DICPATRA CUPREA	1	0.128	1	0.433
ETETTE LACTEA	3	0.384	0	0.0
GLYCERA AMERICANA	4	0.512	0	0.0
GLYCERA DISBRANCHIATA	2	0.256	1	0.433
GLYCINE SOLITARIA	1	0.128	0	0.0
CONVALLA LITTOREA	3	0.384	0	0.0
GRUETULOPSIS MEXICANA	1	0.128	0	0.0
SYPIUS VITTATA	1	0.128	0	0.0
TAPELLICCIOLUS FOLIOSUS	2	0.256	0	0.0

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 9/21/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
HAPLOSCYLICLOS FRAGILIS	6	0.767	0	0.0
HAPLOSCYLICLUS ROGUSTUS	4	0.512	0	0.0
HECTEMASTUS FILIFORMIS	1	0.128	1	0.433
LUMBFINEFIS CHUZENSIS	315	40.281	70	30.303
LUMBFINEFIS TETRAURA	9	1.151	0	0.0
MAGELLA LINGICOFNIS	0	0.0	1	0.433
PEDICIMASTUS CALIFORNIENSIS	2	0.256	0	0.0
MESOCHAETICPTFUS SAGITTARIUS	2	0.256	1	0.433
NEANTHES SUCCINEA	0	0.0	1	0.433
NEPHYTIS BUCERA	1	0.128	0	0.0
NEPHYTIS FICIA	7	0.895	1	0.433
NOTCMASTUS HEMIPODUS	1	0.128	0	0.0
NOICFASTUS LATERICEUS	1	0.128	0	0.0
ONUPHIS EREMITA CCULATA	26	3.325	7	3.030
ONUPHIS REBULCSA	1	0.128	0	0.0
OWENIA FUSIFORMIS	3	0.384	0	0.0
PARANALITES SPECIOSA	1	0.128	0	0.0
PARANITES LYRA	1	0.128	1	0.433
PARANITES FULGENS	1	0.384	0	0.0
PARACNIS SP.	1	0.384	0	0.0
PARAPRIONOSP10 PINNATA	6	0.0	2	0.866
PHYLLODOCE ARENAE	7	0.895	10	4.329
PRIONOSP10 CRISTATA	25	3.197	12	5.195
RULLIERINERIS MEXICANA	25	3.197	7	3.030
SCOLELEPIS TEXANA	1	0.128	0	0.0
SCOLCPLCS ARMIGER	40	5.115	7	3.030
SIGAMBRA BASSI	3	0.384	0	0.0
SIGAMBRA TENTACULATA	0	0.0	5	2.165
SP10 PETIBONEAE	5	1.151	4	1.732
SPIDOPHANES BCMBYX	5	0.639	4	1.732
STHENELAIS BOA	0	0.0	1	0.433
SYREPIOSYLLIS ARENAE	1	0.128	0	0.0
 SIPUNCULIDA (PEANUT WORMS)				
GOLEINGIA TRICHOCEPHALA	2	0.256	0	0.0
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
ACANTHOHALSTORIUS SP.	10	1.279	0	0.0
AMPELISCA ABDITA	4	0.512	0	0.0
AMPELISCA VERRILLI	19	2.430	6	2.597
ARCISSA SP.	0	0.0	1	0.433
CERCOPHILUM SP.	3	0.384	0	0.0
LISTERELLA SP.	1	0.128	1	0.433
MONOCULODES SP.	4	0.512	0	0.0
PROTOFAUSTORIUS SP.	1	0.128	0	0.0
PSEUDOFAUSTORIUS SP.	1	0.128	0	0.0
PSEUCOPLATYSCNOPUS SP.	7	0.895	7	3.030
SYNCHELIDIUM SP.	6	0.256	0	0.0
ANOMURA				
ALBUNEA PARETII	1	0.128	0	0.0
CARIDEA				
PROCESSA FEMPILLI	2	0.256	1	0.433
CUMACEA				
CYCLAFSIS SP.	2	0.256	0	0.0
CYCLAFSIS VARIANS	0	0.0	2	0.866
CYUCSTYLLIS SMITHI	3	0.384	1	0.433
LEPTOSTRACA				
NEBALIA SP.	1	0.128	1	0.433
OSTRACODA				
UNIDENTIFIED SP.	7	0.895	14	6.061

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 5/21/76
 (CONTINUED)

SPECIES	NO. CF IND. (C.)		NO. CF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
PENAIDEA				
<i>SICYENIA BREVIROSTRIS</i>	1	0.128	2	0.866
<i>IRACYPENAEUS CONSTRICTUS</i>	4	0.512	1	0.433
ECHINODERMATA				
ECHINOICEA (SAND DOLLARS; URCHINS)				
<i>MELLITA QUINQUESPERFORATA</i>	4	0.512	0	0.0
HELCOTHELCIDEA (SEA CUCUMBERS)				
<i>LEPICTSYNAPTA</i> SP.	5	0.639	3	1.299
OPHIUROIDEA (BRITTLE STARS)				
UNIDENTIFIED SP.	1	0.128	0	0.0
HEMICHOICATA				
ENTEROPNEELSTA (ACORN WORMS)				
UNIDENTIFIED SP.	1	0.128	0	0.0
CEPHALOCHERCATA (LANCELETS)				
BRANCHIOSTOMA FLORIDAE	5	0.639	1	0.433
TOTALS	782		231	
NO. SPECIES		89		45
NO. IND. PER M2		3128		924
S-W INDEX - H' (LN)		2.9755		2.9440
EVENNESS - J		0.6629		0.7734

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
10/4/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.164
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	27	3.466	17	2.787
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	4	0.513	1	0.164
PHORONIDA (PHORONIDS)				
<u>PHORONIS ARCHITECTA</u>	1	0.128	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
CYLICHNELLA BIGENTATA	0	0.0	1	0.164
OLIVA SAYANA	1	0.128	0	0.0
OLIVELLA PUSILLA	1	0.128	0	0.0
POLYNICES DUPLICATUS	1	0.128	0	0.0
PELECYPODA (CLAMS)				
ANADARA FLORIDANA	3	0.385	0	0.0
ERVILIA CONCENTRICA	3	0.385	1	0.164
LUCINA MULTILINEATA	19	2.439	25	4.754
PERIPLOMA MARGARITACEUM	8	1.027	4	0.656
PITIAR SIMPSONI	1	0.128	0	0.0
STRIGILLA MIRABILIS	1	0.128	0	0.0
TELLINA AEQUISIRIATA	0	0.0	1	0.164
TELLINA IRIS	3	0.385	2	0.328
TELLINA TEXANA	5	0.642	4	0.656
TELLINA VERSICOLOR	33	4.236	19	3.115
VENERIDAE UNIDENTIFIED SP.	1	0.128	1	0.164
ANNELIDA (SEGMENTED WORMS)				
CLIGOCHETA				
UNIDENTIFIED SP.	23	2.953	21	3.443
PCLYCHAETA				
AGLACPHAMUS VERRILLI	1	0.128	0	0.0
AMPHARETE ACUTIFRONS	1	0.128	1	0.164
APOPRIONCPIO PYGMAEA	1	0.128	0	0.0
ARICIDEA FRAGILIS	1	0.128	1	0.164
ARICIOFA SP.	1	0.128	0	0.0
ARMANDIA AGILIS	0	0.0	1	0.164
ARMANDIA MACULATA	0	0.0	3	0.492
ASYCHIS CAROLINAE	2	0.257	19	3.115
BRIANTA BELFLEETENSIS	2	0.257	3	0.492
CAPITELLA CAPITATA	0	0.0	2	0.328
CALIWERELLA SP.	0	0.0	1	0.164
CERATONEREIS IRRITABILIS	27	3.466	44	7.213
CERATONEREIS MIRABILIS	0	0.0	2	0.328
CHAELOCZONE GAYHEADIA	0	0.0	2	0.328
CHAELOCZONE SETOSA	1	0.128	0	0.0
CHONE SP.	6	0.770	33	0.492
CLISTENIDES GOULDII	4	0.513	2	0.328
DAESYBRANCHIS LUMBRICOIDES	0	0.0	1	0.164
DENDRITRA CICREA	1	0.128	1	0.164
ETEDONE LACTEA	1	0.128	4	0.656
GLYCERA AMERICANA	1	0.128	4	0.656
GLYCERA DIBRANCHIATA	5	0.642	2	0.328
GLYCERA SP.	0	0.0	1	0.164
GENIAEA LITISSEA	15	1.926	1	0.164

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 10/4/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.)	TOTAL PERCENT	NO. OF IND. (E.)	TOTAL PERCENT
GYPSIS VITIATA	2	0.257	2	0.328
HAPLOSCLELEPS FOLIOSUS	2	0.257	5	0.820
HAPLOSCLELEPS FRAGILIS	10	1.284	1	0.164
HAPLOSCLELEPS ROBUSTUS	1	0.128	1	0.164
HARMOTHLE LUNULATA	1	0.128	0	0.0
HETEROMASTUS FILIFORMIS	0	0.0	4	0.656
ISCLCA PULCHELLA	1	0.128	0	0.0
LUMBRICELIS CEUZENSIS	196	25.160	42	7.869
LUMBRICELIS TETRAURA	46	5.905	27	4.426
PACIFICLYCENE ZENALIS	2	0.257	1	0.164
MAGELLIA SP.	1	0.128	0	0.0
MEDICHASTUS CALIFORNIENSIS	1	0.128	3	0.492
MEGALCMMA BIOCULATUM	0	0.0	4	0.656
MESOCYANOPTERUS SAGITTARIUS	1	0.128	1	0.164
MICRASPIS PIGMENTATA	1	0.128	0	0.0
SYRICCFELLE SP.	0	0.0	1	0.164
NEANTIPES SUCCINEA	1	0.128	0	0.0
NEPHYTIS PICTA	11	1.412	2	0.328
NOTOCYASTUS HEMIPODUS	5	0.642	2	0.492
NOTOCYASTUS LATERICEUS	1	0.128	0	0.0
ONUPIS EREMIA OCULATA	36	4.621	22	3.607
ONUPIS NEURODOSA	1	0.128	0	0.0
OVENIA FUSIFORMIS	1	0.128	7	1.148
PARAONICES LYRA	15	1.926	7	1.148
PARACNIS FILIGENS	6	0.770	1	0.164
PARACNIS SP.	4	0.513	1	0.164
PARAFIXICNISIC PINNATA	4	0.513	20	3.279
PHYLLOCOCE ARENAE	2	0.257	9	1.475
POLYCOCTNES LUPINA	1	0.128	0	0.0
PSITTACSPIC CRISTATA	55	7.060	51	8.361
RULLIERINERETIS MEXICANA	29	3.723	17	2.787
SCLELEPS ARMIGER	47	6.033	11	1.803
SCLELEPS FUERA	1	0.128	2	0.328
SIGALION ARENICOLA	1	0.128	0	0.0
SIGAMERA TENTACULATA	0	0.0	21	3.443
SPIO PETTIPONEAE	3	0.385	3	0.492
SPIDOPHANES BOMBYX	13	1.669	11	1.803
STHENELAIS BOA	0	0.0	1	0.164
 SIPUNCULIDA (PEANUT WORMS)				
GOLEINGIA TRICHOCEPHALA	3	0.385	6	0.984
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
AMPHISCA AEDITA	5	0.642	12	1.967
AMPHISCA VERRILLI	16	2.054	15	2.459
CORCIPIUM SP.	0	0.0	1	0.164
LISTEFLA SP.	0	0.0	3	0.492
MONOCULICIDES SP.	2	0.257	1	0.164
PARAPHOXUS SP.	1	0.128	0	0.0
PSUEDOHAUSTORIUS SP.	0	0.0	2	0.328
PSUEDOPLATYISCHNOPLIS SP.	2	0.257	4	0.656
ANOMURA				
ALBUREA PARELLI	4	0.513	12	1.967
EUCERAMUS PRAEOLONGUS	1	0.128	0	0.0
EFACHYURA				
CALLIPECIES SAPIDUS	1	0.128	0	0.0
PERSEPHONA P. AQUILONARIS	1	0.128	0	0.0
PINNIXIA SAYANA	0	0.0	3	0.492
CALLIATASSIOAE				
CALLIANASSA JAMAICENSE	2	0.257	1	0.164

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 10/4/76
 (CONTINUED)

SPECIES	NO. OF IND. (E.)	TOTAL PERC.	NO. OF IND. (E.)	TOTAL PERCENT
CARIDEA <i>PROCESSA HEMPHILLI</i>	2	0.257	2	0.328
CUMACEA <i>CYCLAPSIS SP.</i>	6	0.770	2	0.328
<i>CYCLAPSIS VARIANS</i>	0	0.0	2	0.328
<i>OXYEDOSTYLIS SMITHI</i>	3	0.385	5	0.820
MYSIDACEA UNIDENTIFIED SP.	2	0.257	4	0.656
OSTRACODA UNIDENTIFIED SP.	6	0.770	14	2.295
PENAEIDEA <i>SICYONIA BREVIROSTRIS</i>	1	0.128	1	0.164
<i>TRACHYPENAEUS CONSTRICTUS</i>	6	0.770	1	0.164
TANATIDACEA UNIDENTIFIED SP.	0	0.0	1	0.164
ECHINODEMATA ASTEROIDEA (STARFISHES) <i>ASTREPECTEN ARTICULATUS</i>	2	0.257	3	0.492
HOLOTUROIDEA (SEA CUCUMBERS) <i>LEPTOCYNAPTA SP.</i>	5	0.642	26	4.262
OPHIURICIDEA (BRITTLE STARS) <i>OPHIOPHRAGMUS MURDEMANI</i>	1	0.128	0	0.0
CEPHALOCHORDATA (LANCETTS) <i>BRANCHIOSTOMA FLORIDAE</i>	0	0.0	2	0.328
TOTALS	779		610	
NO. SPECIES		87		85
NO. IND. PER M ²		3116		2440
S-M INDEX - H ² (LN)		3.2650		3.7160
EVENNESS - J		0.7311		0.8364

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
10/16/76

SPECIES	NO. OF IND. (C.)		NO. OF IND. (S.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	1	0.102	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	2	0.204	0	0.0
NEMERTINA (FIBBER WORMS)				
UNIDENTIFIED SP.	15	1.534	4	1.423
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	32	3.272	3	1.068
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
OLIVA SAYANA	1	0.102	0	0.0
CLIVELLA BULLULA	0	0.0	1	0.356
TEREERA DISLOCATA	3	0.307	0	0.0
PELECYPODA (CLAMS)				
ERVILIA CONCENTRICA	6	0.613	1	0.356
LUCINA MULTILINEATA	5	0.511	11	3.915
MACRICALLISTA NIMBOSA	1	0.102	0	0.0
PERIPLOMA MARGARITACEUM	1	0.102	0	0.0
STRIGILLA MIRABILIS	17	1.738	0	0.0
TELLINA IRIS	2	0.204	0	0.0
TELLINA TEXANA	9	0.920	1	0.356
TELLINA VERSICOLOR	26	2.658	5	1.779
ANNELIDA (SEGMENTED WORMS)				
CLIGOCHEA				
UNIDENTIFIED SP.	19	1.943	3	1.068
POLYCHAETA				
APOPRIONOSPILO PYGMAEA	0	0.0	3	1.068
ARICILIA CERRITI	1	0.102	0	0.0
ARICILIA SUECICA	7	0.716	0	0.0
ARMANDIA AGILIS	1	0.102	1	0.356
ARMANDIA MACULATA	10	1.022	0	0.0
BRANIA BELLEFLEETENSIS	13	1.329	0	0.0
CERATONEREIS IRRITABILIS	5	0.511	11	3.915
CHAELOCYCNE SEIOSA	0	0.0	2	0.712
PHONE SP.	10	1.022	0	0.0
DIOPATRA CUPREA	1	0.102	0	0.0
DORYVILLA SOCIABILIS	3	0.307	0	0.0
EIONE LACTEA	4	0.409	1	0.356
GLYCERA AMERICANA	9	0.920	9	3.203
GLYCERA DIBRANCHIAIA	2	0.204	0	0.0
SONIACA LITIFREA	1	0.102	0	0.0
GYPTIS VITTATA	2	0.204	0	0.0
HAPLISCELLPLIS FOLIOSUS	4	0.409	2	0.847
HAPLISCELLPLIS FRAGILIS	1	0.102	0	0.0
HAPLISCELLPLIS ROBUSTUS	1	0.102	0	0.0
HARMATHECA LUNULATA	0	0.0	1	0.356
LUMBEINERIS CRUZENSIS	442	45.194	72	25.623
LUMBEINERIS TETRAURA	2	0.204	0	0.0
PAGELLA SP.	1	0.102	0	0.0
MEDIMASTUS CALIFORNIENSIS	1	0.102	1	0.356
NEANITES ACUMINATA	1	0.102	1	0.356
NEPTIUS PICTA	10	1.022	2	0.712
NOTOMASTUS HEMIPODUS	2	0.204	4	1.423

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 10/18/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
NOTCHASTUS LATERICEUS	0	0.0	1	0.356
CNUPHIS EREMITA CULATA	1	0.102	6	2.135
CRINIA RISERI	1	0.102	0	0.0
CRINIA FUSIFORMIS	1	0.102	0	0.0
PARACATITES SPECIOSA	2	0.204	0	0.0
PARACATITES LYRA	1	0.102	0	0.0
PARACNIS FEL GEN	2	0.204	0	0.0
PARACNIS SP.	1	0.102	0	0.0
PARAPRIONOSP. PINNATA	1	0.102	3	1.068
PHYLLODOCE ARENAE	0	0.0	2	0.712
PRIONOSP. CRISTATA	77	7.873	27	5.609
RULLIERINEREA MEXICANA	15	1.534	14	4.982
SCOLELEPIS TEXANA	1	0.102	0	0.0
SCOLOPLOS ARMIGER	37	3.783	0	0.0
SCOLOPLOS RUBRA	1	0.102	0	0.0
SIGAMBRA BASSI	3	0.307	0	0.0
SIGAMBRA TENTACULATA	0	0.0	3	1.068
SP. PETTIBONEAE	2	0.204	2	0.712
SPIOPLANES BOMBYX	3	0.307	4	1.423
ARTHROPODS (CRUSTACEANS)				
AMPHIPODA				
AMPELISCA VERRILLI	14	1.431	29	10.320
ARGISSEA SP.	1	0.102	0	0.0
LISTRIELLA SP.	5	0.511	3	1.068
MONOCLEODES SP.	19	1.943	6	2.135
PARAPHOXUS SP.	1	0.102	0	0.0
PHOTIS SP.	1	0.102	0	0.0
PROTCHAUSTORIUS SP.	7	0.716	0	0.0
PSEUDOCHAUSTORIUS SP.	1	0.102	0	0.0
PSEUDOPLATYTSCHNOCUS SP.	28	2.863	20	7.117
SYNCEPIDIUM SP.	3	0.307	1	0.356
TIRON EIOSCELLATUS	0	0.0	1	0.356
ANOMURA				
ALBUREA FARELLI	3	0.307	4	1.423
EUCERAMUS PRAEOLONGUS	1	0.102	2	0.712
PAGURUS SP.	1	0.102	1	0.356
CALLIANASSA				
CALLIANASSA JAMAICENSIS	C	0.0	1	0.356
CARIODEA				
HYGRIDES LIMICOLA	0	0.0	1	0.356
CUMACEA				
CYCLAPSIS SP.	31	3.170	1	0.356
OXYUROSTYLIS SMITHI	0	0.0	1	0.356
MYSIACEA				
UNIDENTIFIED SP.	1	0.102	0	0.0
OSTRACODA				
UNIDENTIFIED SP.	8	0.818	1	0.356
ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
ASTROPICCIUS ARTICULATUS	1	0.102	0	0.0
ECHINOIDEA (SAND DOLLARS; URCHINS)				
MELITA QUINQUIESPERFORATA	4	0.409	0	0.0
HOLOTHURIOIDEA (SEA CUCUMBERS)				
LEPTISYDÆTA SP.	1	0.102	1	0.356
OPHIUROIDEA (BRITTLE STARS)				
OPHIOPHRAGMUS BURDEMANI	2	0.204	0	0.0
UNIDENTIFIED SP.	1	0.102	0	0.0
CEPHALOCHORDATA (LANCELETS)				

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
11/1/76

SPECIES	NO. OF IND. (C)		NO. OF IND. (E)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNIDARIA ACTINIARIA (SEA ANEMONES) UNIDENTIFIED SP.	3	0.397	0	0.0
PLATYHELMINTHES TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	2	0.265	2	0.391
NEMERTINEA (RIBBON WORMS) UNIDENTIFIED SP.	12	2.384	6	1.174
NEMATODA (ROUNDWORMS) UNIDENTIFIED SP.	8	1.060	1	0.196
MOLLUSCA (SHELLFISH) GASTROPODA (SNAILS)				
NATICA PUSILLA	1	0.132	0	0.0
OLIVELLA BULLATA	1	0.132	3	0.587
TEREERA CISLOCATA	1	0.132	0	0.0
PELECYPODIA (CLAMS)				
CARDIOMYA COSTELLATA	0	0.0	1	0.196
ERVILIA CONCENTRICA	1	0.132	0	0.0
LUCINA MULTILINEATA	2	0.265	14	2.740
SEMELE PROFICUA	0	0.0	1	0.196
STRIGILLA MIRABILIS	1	0.325	0	0.0
TELLINA A. TAYLORIANA	0	0.0	1	0.196
TELLINA IRIS	0	0.0	3	0.587
TELLINA TEXANA	4	0.530	0	0.0
TELLINA VERSICOLOR	16	2.119	7	1.370
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	35	4.636	1	0.196
POLYCHAETA				
APOPHIONOSPILO PYGMAEA	1	0.132	0	0.0
ARTICIDEA SUECICA	5	0.662	0	0.0
ARMANDIA MACULATA	5	0.662	2	0.391
BRANIA CLAVATA	1	0.132	0	0.0
BRANIA WELLFLEETIENSIS	12	1.589	0	0.0
CAULLERIETTA SP.	1	0.132	0	0.0
CERATONEREIS IRRITABILIS	11	1.457	18	3.523
CHAE TOZINE SETOSA	1	0.132	1	0.196
CHONE SP.	7	0.927	0	0.0
ETCONE LACTEA	2	0.265	0	0.0
FUNICE ANTENNATA	1	0.132	0	0.0
EURYTHICE COMPLANATA	0	0.0	1	0.196
GLYCERA AMERICANA	7	0.927	8	1.566
GLYCERA DICRANCHIATA	2	0.265	1	0.196
GONIADA LITTALEA	2	0.265	1	0.196
GYPSIS VITTATA	7	0.927	0	0.0
HAPLISCELLIPS FOLIOSUS	7	0.927	0	0.0
HAPLISCELLIPS FRAGILIS	5	0.662	2	0.391
HAPLISCELLIPS RUBRUSTUS	0	0.0	1	0.196
LUMBRINERIS CRUZENSIS	342	45.298	216	42.270
LUMBRINERIS TETRAURA	4	0.530	1	0.196
MAGELINA LONGICORNIS	0	0.0	2	0.391
MEDICASTIS CALIFORNIENSIS	2	0.265	2	0.391
NEANTIDES SUCCLINA	0	0.0	1	0.196
NEPHIUS BUCERA	2	0.265	0	0.0
NEPHIUS PICIA	5	1.192	1	0.196

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
10/18/76
(CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL PERCENT	NO. OF IND. (E.) TOTAL PERCENT
<u>BRANCHISTOMA FLORIDA</u>	21 2.147	1 0.356
TOTALS	978	281
NO. SPECIES	77	46
NO. IND. PER M ²	3912	1124
S-W INDEX - H'(LN)	2.6227	2.9372
EVENNESS - J	0.6038	0.7672

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 11/1/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
<i>NOTOMASTUS HEMIPODUS</i>	1	0.132	1	0.196
<i>ONUPHIS EREMITA OCULATA</i>	11	1.457	6	1.174
<i>ONUPHIS NEBULOSA</i>	2	0.265	2	0.391
<i>ORBINIA RISERI</i>	1	0.132	0	0.0
<i>OLENIA FLSIFORMIS</i>	1	0.132	0	0.0
<i>PARACNIDES LYRA</i>	1	0.132	0	0.0
<i>PARACNIDES FULGENS</i>	6	0.795	1	0.196
<i>PARAFTENOSPIC PINNATA</i>	0	0.0	8	1.566
<i>PHYLLODICE ARENAE</i>	2	0.265	1	0.196
<i>PRINCIPIC CRISTATA</i>	15	1.987	14	2.740
<i>RULIFEREREIS MEXICANA</i>	11	1.457	17	3.327
<i>SCOLIFLIS ARMIGER</i>	30	3.974	10	1.957
<i>SCOLIFLIS RUBRA</i>	3	0.397	0	0.0
<i>SIGAMERA BASSI</i>	1	0.132	0	0.0
<i>SIGAMERA TENTACULATA</i>	0	0.0	1	0.196
<i>SPIC PETTIBONEAE</i>	1	0.132	2	0.391
<i>SPADIFANES BOMBYX</i>	0	0.0	7	1.370
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<i>ACANTHOFAUSTORIUS SP.</i>	2	0.265	0	0.0
<i>AMPELISCA VERRILLI</i>	5	0.662	29	5.675
<i>LISTIELLA SP.</i>	3	0.397	3	0.587
<i>MONOCULODES SP.</i>	8	1.060	18	3.523
<i>PROTOFAUSTORIUS SP.</i>	6	0.795	0	0.0
<i>PSEUDOFALSTORIUS SP.</i>	18	2.384	0	0.0
<i>PSEUDOPLATYTSCHONOPIS SP.</i>	65	8.609	66	12.916
<i>SYNCFELIDIUM SP.</i>	0	0.0	1	0.196
ANOMURA				
<i>ALBUNEA PARETTI</i>	0	0.0	6	1.174
BRACHYURA				
<i>OVALIFES CCELLATUS</i>	3	0.397	1	0.196
<i>PINIXIA SAYANA</i>	0	0.0	1	0.196
CALLIANASSIDAE				
<i>CALLIANASSA JAMAICENSIS</i>	1	0.132	0	0.0
CARIDEA				
<i>LEPTOCHELA SERRATORBITA</i>	0	0.0	1	0.196
<i>PROCESSA HEMPHILLI</i>	2	0.265	2	0.391
CUMACEA				
<i>CYCLAPSIDA SP.</i>	2	0.265	1	0.196
<i>CYCLAPSIDA VARIANS</i>	2	0.265	0	0.0
MYSIDACEA				
<i>UNIDENTIFIED SP.</i>	1	0.132	2	0.391
OSTRACODA				
<i>UNIDENTIFIED SP.</i>	1	0.132	2	0.391
ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
<i>ASTRIDIUM AFICULATUS</i>	2	0.265	2	0.391
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<i>MELITTA QUINQUESPERFORATA</i>	1	0.132	0	0.0
HOLOTHUROIDEA (SEA CUCUMBERS)				
<i>LEPTISYNAPTA SP.</i>	1	0.132	2	0.391
OPHIURICIDA (BRITTLE STARS)				
<i>OPHIOPHRAGMUS BURDEMANI</i>	0	0.0	1	0.196
CEPHALOCHORDATA (LANCELETS)				
<i>BRANCHICISTIGMA FLORIDA</i>	8	1.060	5	0.978

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
11/1/76
(CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL PERCENT	NO. OF IND. (E.) TOTAL PERCENT
TOTALS	755	511
NO. SPECIES	67	55
NO. IND. PER M ²	3020	2044
S-B INDEX - H'(LN)	2.6057	2.4953
EVENNESS - J	0.6157	0.6227

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
12/1/76

SPECIES	NO. OF IND. (C)		NO. OF IND. (E)	
	TOTAL	PERCENT	TOTAL	PERCENT
NEMERTINEA (RIBBED WORMS) UNIDENTIFIED SP.	29	3.766	15	1.695
NEMATODA (ROUNDWORMS) UNIDENTIFIED SP.	26	3.377	2	0.226
PHORONIDA (PHORONIDS) <u>PHORONIS ARCHITECTA</u>	3	0.390	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
NASSARIUS ACUTUS	1	0.130	0	0.0
POLYNICES DUPLICATUS	2	0.260	2	0.226
PELECYPODA (CLAMS)				
ERVILIA CONCENTRICA	1	0.130	0	0.0
LUCINA MULTILINEATA	12	1.558	6	0.678
PERIGLIMA MARGARITACEUM	4	0.519	0	0.0
SEMELE FECIFICA	2	0.260	0	0.0
STRIGILLA MIRABILIS	2	0.260	6	0.678
TELLINA TEXANA	0	0.0	5	0.565
TELLINA VERSICOLOR	13	1.688	6	0.678
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	45	5.844	9	1.017
POLYCHAETA				
AGLAOPHAMS VERRILLI	1	0.130	0	0.0
AMPHARETE ACUTIFRONS	1	0.130	0	0.0
APCFICRISSEAE PYGMAEA	3	0.390	3	0.339
ARICIDEA CERFUTI	11	1.429	11	0.113
ARICIDEA FRAGILIS	1	0.130	1	0.113
ARMANDIA AGILIS	2	0.260	6	0.678
ARMARIA MACULATA	5	0.649	9	1.017
AXIOTIELLA MUCOSA	1	0.130	0	0.0
ERANIA CLAVATA	2	0.260	1	0.113
ERANIA WELLFLEETENSIS	2	0.260	0	0.0
CABIRIA INCERTA	0	0.0	1	0.113
CERATNEREIS IRRITABILIS	2	0.260	6	0.678
CHAETZONE SETOSA	0	0.0	1	0.113
CHONE SP.	8	1.039	0	0.0
CISTENICES GOULDII	2	0.260	0	0.0
ETECHE LACTEA	5	0.649	4	0.452
GLYCERA AMERICANA	3	0.390	8	0.904
GLYCERA DIBRANCHIATA	1	0.130	0	0.0
GONIACA LITOREA	7	0.909	1	0.113
CRYPTIS VITIATA	6	0.779	0	0.0
HAPLOSCOLOPLOS FOLIOSUS	8	1.039	11	1.243
HAPLOSCOLOPLOS FRAGILIS	10	1.299	3	0.339
HAPLOSCOLOPLOS RODSISUS	1	0.130	0	0.0
ISOCHA PULCHELLA	1	0.130	0	0.0
LUSCINERIS CRUZENSIS	240	31.169	429	48.475
LUSCINERIS TENUIS	21	2.727	5	0.565
SAGITTINA LONGICORNIS	0	0.0	2	0.226
SAGITTINA PETTIBONEAE	1	0.130	0	0.0
SAGITTINA STOJAY	0	0.0	1	0.113
SAGITTINA CALIFORNENSIS	2	0.260	0	0.0
SAGITTINA TRIPERA	1	0.130	0	0.0
SAGITTINA VACUATA	0	0.0	1	0.113
SAGITTINA VEXILLIFERA	1	0.130	1	0.113
SAGITTINA VEXILLIFERA	0	0.0	2	0.226

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 12/1/76
 (CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
<i>NOTOMASTUS HEMIPODUS</i>	1	0.130	4	0.452
<i>NOTOMASTUS LATERICEUS</i>	2	0.260	0	0.0
<i>ONUPPIS EREMITA OCULATA</i>	28	3.636	15	1.695
<i>ONUPPIS NEBULOSA</i>	4	0.519	0	0.0
<i>OWENIA FUSIFORMIS</i>	1	0.130	0	0.0
<i>PARACNIDES LYRA</i>	4	0.519	0	0.0
<i>PARACNIDES FULGENS</i>	1	0.130	3	0.339
<i>PARAEFFIGINCSPIO PINNAIA</i>	0	0.0	3	0.339
<i>PHYLLOCOCCE ARENAE</i>	0	0.0	4	0.452
<i>PRICINCSPIC CRISTATA</i>	41	5.325	55	6.215
<i>RULLIERINEREIS MEXICANA</i>	12	1.558	9	1.017
<i>SCCLIFELIS ARMIGER</i>	34	4.416	44	4.972
<i>SCCOLOPLOS RUERA</i>	1	0.130	0	0.0
<i>SIGAMBRA TENTACULATA</i>	1	0.130	0	0.0
<i>SPIO PETTIGONEAE</i>	1	0.130	1	0.113
<i>SPIOPLANES BOMBYX</i>	4	0.519	5	0.565
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<i>ACANTHCHAUSTORIUS SP.</i>	1	0.130	3	0.339
<i>AMPELISCA VERRILLI</i>	10	1.299	23	2.599
<i>HYPETRIA SP.</i>	14	1.818	0	0.0
<i>LISTIELLA SP.</i>	4	0.519	4	0.452
<i>MONOCULIDES SP.</i>	4	0.519	7	0.791
<i>PROCTCHAUSTORIUS SP.</i>	0	0.0	9	1.017
<i>PSUEDOCHAUSTORIUS SP.</i>	2	0.260	8	0.904
<i>PSYUOPLATYISCHNOPUS SP.</i>	79	10.260	117	12.220
<i>SYNCHELIDIUM SP.</i>	1	0.130	1	0.113
<i>TIRON SP.</i>	1	0.130	0	0.0
ANOMURA				
<i>ALBUNEA PARETII</i>	4	0.519	6	0.678
<i>PAGURUS LONGICARPUS</i>	2	0.260	0	0.0
EFACHYURA				
<i>CVALIFES CCELLATUS</i>	2	0.260	1	0.113
<i>CALLIANASSIDAE</i>				
<i>CALLIANASSA JAMAICENSIS</i>	1	0.130	0	0.0
CARIDEA				
<i>HIPPOLYTE PLURICANTHA</i>	1	0.130	0	0.0
<i>LEPTOCHELA SERRATORBITA</i>	0	0.0	2	0.226
CUMACEA				
<i>CYCLAFSIS SP.</i>	1	0.130	1	0.113
<i>CYCLAFSIS VARIANS</i>	2	0.260	0	0.0
OSTRACODA				
UNIDENTIFIED SP.	3	0.390	2	0.226
PEMIDEA				
<i>IRACHYPENAEUS CONSTRICTUS</i>	1	0.130	1	0.113
ECHINODERMATA				
HOLOTHUROIDEA (SEA CUCUMBERS)				
<i>LEPTOSYNAPIA SP.</i>	3	0.390	0	0.0
CEPHALOCHORDATA (LANCETTS)				
<i>BRANCHIOSTOMA FLORIDAE</i>	10	1.299	6	1.017
TOTALS	770		865	
NO. SPECIES		74		54
NO. IND. PER M ²		3080		3540
S-W INDEX - H ² (LN)		2.9874		2.2595
EVENNESS - J		0.6941		0.5664

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
1/5/77

SPECIES	NO. OF IND. (C)		NO. OF IND. (E)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	3	0.696	0	0.0
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	9	2.088	13	2.372
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	8	1.856	1	0.182
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTECINA CANDEI	1	0.232	0	0.0
POLINICES DUPLICATUS	0	0.0	1	0.182
PELECYPODA (CLAMS)				
LUCINA MULTILINEATA	1	0.232	3	0.547
PERIFERMA MARGARITACEUM	0	0.0	3	0.547
STRIGILLA MIRABILIS	5	1.160	0	0.0
TELLINA TEXANA	1	0.232	0	0.0
TELLINA VERSICOLOR	18	4.176	1	0.182
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	57	13.225	2	0.365
POLYCHAETA				
AGLAOPHAMUS VERRILLI	1	0.232	0	0.0
APOPRIONOSPIO PYGMAEA	0	0.0	1	0.182
ARICIDEA CERRUTI	2	0.464	0	0.0
ARMANDIA AGILIS	1	0.232	3	0.547
ARMANDIA MACULATA	3	0.696	0	0.0
BRANIA WELLFLEETENSIS	1	0.232	0	0.0
CERATINEFELIS IRITABILIS	0	0.0	6	1.095
CHICAE SP.	6	1.392	1	0.547
CISTERNIIDES GOULDII	0	0.0	0	0.182
DICPAIRA CUPREA	1	0.232	0	0.0
GLYCERA AMERICANA	8	1.856	4	0.730
GNIADA LITIGREA	1	0.232	0	0.0
GYPTIS VITTATA	2	0.464	0	0.0
HAPLOCYCLOPS FOLIOSUS	2	0.464	0	0.0
HAPLOCYCLOPS FRAGILIS	0	0.0	1	0.182
LUMBFINEFIS ACUTUS	4	0.928	0	0.0
LUMBFINEFIS CRUZENSIS	15	3.480	343	62.591
LUMBFINEFIS TENUIS	2	0.464	0	0.0
LUMBFINERIS TETRAURA	4	0.928	0	0.0
MACHICLYMENE ZONALIS	1	0.232	1	0.182
MAGELLA LONGICORNIS	1	0.232	0	0.0
MAGELLA SP.	2	0.464	0	0.0
NEPHYTIS BUCERA	1	0.232	0	0.0
NEPHYTIS PICTA	4	0.928	0	0.0
NOTOMASTUS HEMIPODUS	2	0.464	0	0.0
NOTOMASTUS LATERICUS	0	0.0	1	0.182
PNUPPIS FREMITA OCULATA	0	0.0	3	0.547
PARACNICES LYRA	0	0.0	1	0.182
PARACNICES FULGENS	1	0.232	0	0.0
PARAPRIONOSPIO PINNATA	0	0.0	1	0.547
PHYLLODOCE ARENAE	0	0.0	3	0.547
PRIONOSPIO CRISTATA	16	3.712	35	6.387
RULLITERINEREIS MEXICANA	13	3.016	22	0.365
SCOLELEPIS SQUAMAJA	2	0.464	0	0.0
SCOLELEPIS TEXANA	3	0.696	0	0.0

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 1/5/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>SCOLOPCLOS ARMIGER</u>	35	8.121	23	4.197
<u>SIGAMBRA BASSI</u>	1	0.232	0	0.0
<u>SPIO PETTIBONEAE</u>	1	0.232	0	0.0
<u>SPLOPHANES BOMBYX</u>	6	1.392	11	2.007
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOHAUSTORIUS SP.</u>	3	0.696	0	0.0
<u>AMPELISCA VERRILLI</u>	1	0.232	10	1.825
<u>ERICHTHONIUS SP.</u>	2	0.464	0	0.0
<u>LISTRICELLA SP.</u>	2	0.464	1	0.182
<u>MONOCULODES SP.</u>	1	0.232	1	0.182
<u>PROTOHALSTORIUS SP.</u>	15	3.480	4	0.730
<u>PSUEDOHALSTORIUS SP.</u>	40	9.281	4	0.730
<u>PSYCHOPLATYPSCHNOPUS SP.</u>	95	22.042	45	8.212
<u>SYNCHELIDIUM SP.</u>	0	0.0	3	0.547
ANOMURA				
<u>PAGURUS LONGICARPUS</u>	2	0.464	0	0.0
BRACHYURA				
<u>OVALIPES OCELLATUS</u>	2	0.464	2	0.365
<u>PINNIXIA SAYANA</u>	2	0.464	1	0.182
CARICEA				
<u>HIPPOLYTE FLEURACANTEA</u>	1	0.232	0	0.0
CUNACEA				
<u>CYCLAPSIS VARIANS</u>	1	0.232	0	0.0
ECHINOCERATA				
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>MELLITA QUINQUESPERFORATA</u>	1	0.232	0	0.0
HCLOTUROIDEA (SEA CUCUMBERS)				
<u>LEPTISYNAPIA SP.</u>	2	0.464	3	0.547
HEMICHORCATA				
ENTEROPNEUSTA (ACORN WORMS)				
<u>UNIDENTIFIED SP.</u>	1	0.232	0	0.0
CEPHALOCHORDATA (LANCETTS)				
<u>BRANCHIOSTOMA FLORIDAE</u>	15	3.480	5	0.912
TOTALS	431		548	
NO. SPECIES		56		36
NO. IND. FER M2		1724		2192
S-W INDEX - H ² (LN)		3.0102		1.7037
EVENNESS - J		0.7478		0.4754

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
2/2/77

SPECIES	NO. OF IND. (C)	TOTAL PERCENT	NO. OF IND. (E)	TOTAL PERCENT
NEMERTINEA (RIBBON WORMS) UNIDENTIFIED SP.	16	4.222	16	2.893
NEMATODA (ROUNDWORMS) UNIDENTIFIED SP.	18	4.749	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ANACASSIS FLORIDANA	1	0.264	0	0.0
NATICA PLISILLA	4	1.055	1	0.181
OLIVA SAYANA	0	0.0	1	0.181
POLINICES DUPLICATUS	1	0.264	0	0.0
TURBELLARIA CONRADII	1	0.264	0	0.0
PELECYPODA (CLAMS)				
LUCINA MULTILINEATA	6	1.583	15	2.712
MACROCALLISTA NIMBOSA	2	0.528	0	0.0
PERIPLOMA MARGARITACEUM	1	0.264	0	0.0
PITAR SIMPSONI	1	0.264	0	0.0
STRIGILLA MIRABILIS	6	1.583	0	0.0
TELLINA TEXANA	2	0.528	1	0.181
TELLINA VERSICOLOR	7	1.847	3	0.542
ANNELEIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	35	9.235	4	0.723
POLYCHAETA				
AGLAOPHEMUS VERRILLI	0	0.0	1	0.181
APOEUDONOSPIS PYGMAEA	1	0.264	0	0.0
ARICICEA CERRUTI	0	0.0	1	0.181
ARICICEA FRAGILIS	0	0.0	2	0.362
ARMANDIA AGILIS	1	0.264	1	0.181
ARVANDIA MACULATA	6	1.583	0	0.0
BRANIA CLAVATA	2	0.792	0	0.0
BRANIA WELLFLEETENSIS	1	0.264	0	0.0
CHAEOTONEZONE SETOSA	0	0.0	2	0.362
CHONE SP.	4	1.055	4	0.723
DIOPATRA CUPREA	0	0.0	2	0.362
ETEONE LACTEA	0	0.0	1	0.181
GLYCERA AMERICANA	1	0.264	0	0.0
GLYCERA DIBRANCHIATA	0	0.0	2	0.362
GONIADA LITTOREA	1	0.264	2	0.362
GYPTIS VITTATA	1	0.264	0	0.0
HAPLOCYCLOPODOS FOLIOSIS	1	0.264	0	0.0
HAPLOCYCLOPODOS FRAGILIS	2	0.528	1	0.181
LUMBRINERIS CRIZENSIS	6	1.583	325	52.770
LUMBRINERIS TETRAURA	5	1.319	1	0.181
MAGELONA LONGICORNIS	0	0.0	4	0.723
PAGELONA SP.	1	0.264	0	0.0
MEDITMASTUS CALIFORNIENSIS	0	0.0	2	0.362
NEANthes SP.	0	0.0	2	0.362
NEPHIYS BICERA	1	0.264	0	0.0
NEPHIYS PICTA	3	0.792	3	0.542
NOTOMASTUS HEMIPODUS	1	0.264	0	0.0
CLOTHIS FREMITA OCULATA	2	0.528	32	5.787
PARACNIDES LYRA	1	0.264	0	0.0
PARACNIDES FULGENS	1	0.264	0	0.0
POLYDORA TETHAERANCHIA	2	0.528	1	0.181
PRICAPSIS CRISTATA	15	3.958	31	5.606
BULLERINERETIS MEXICANA	7	1.847	7	1.266
SCOLELEPIS GUAMATA	5	1.319	2	0.362

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 2/2/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<i>SCOLELEPIS TEXANA</i>	9	2.375	4	0.723
<i>ECOLCPLES ARMIGER</i>	28	7.388	2	0.362
<i>SIGAMBRA TENTACULATA</i>	0	0.0	1	0.181
<i>SPIO PETTIBONEAE</i>	1	0.264	0	0.0
<i>SPLOPHANES BCMBYX</i>	11	2.902	26	4.702
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<i>ACANTHOHAUSTORIUS SP.</i>	16	4.222	2	0.362
<i>AMPELISCA VERRILLI</i>	2	0.528	0	0.0
<i>LISTERELLA SP.</i>	3	0.792	0	0.0
<i>MONOCULIDES SP.</i>	1	0.264	0	0.0
<i>PRISTHAUSTORIUS SP.</i>	34	8.971	2	0.362
<i>PS FUDOFIAUSTORIUS SP.</i>	0	0.0	1	0.181
<i>PSEUOPLATYISCHNOPUS SP.</i>	88	23.219	35	6.329
<i>SYNCHETIDIUM SP.</i>	2	0.528	0	0.0
ANOMURA				
<i>ALBUNEA PARELLI</i>	0	0.0	4	0.723
ERACHYURA				
<i>SYALIFES SCELLATUS</i>	0	0.0	1	0.181
CUMACEA				
<i>CYCLAPSIS VARIANS</i>	0	0.0	1	0.181
OSTRACODA				
UNIDENTIFIED SP.	3	0.792	1	0.181
PEMIDEA				
<i>SICYCYNIA BREVIROSTRIS</i>	0	0.0	1	0.181
ECHINODERATA				
ASTEROIDEA (STARFISHES)				
<i>ASTRCPECIEN ARTICULATUS</i>	1	0.264	0	0.0
ECHINODICEA (SAND DOLLARS; URCHINS)				
<i>MCIFIA ATROPIS</i>	1	0.264	0	0.0
HOLothuridea (SEA CUCUMBERS)				
<i>LEPTOSYNAPTA SP.</i>	0	0.0	1	0.181
CEPHALOCHORDATA (LANCETTS)				
<i>BRANCHIOSTOMA FLORIDAE</i>	6	1.583	1	0.181
TOTALS				
NO. SPECIES	379	53	553	44
NO. INC. PER M ²		1516		2212
S-W INDEX - H ⁰ (LN)		3.0609		1.8770
EVENNESS - J		0.7710		0.4960

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
3/1/77

SPECIES	NO. OF IND. (C)		NO. OF IND. (E)	
	TOTAL	PERCENT	TOTAL	PERCENT
NEMERTINEA (RIBBON WORMS) UNIDENTIFIED SP.	17	2.881	17	1.822
NEMATODA (ROUNDWORMS) UNIDENTIFIED SP.	6	1.017	10	1.072
PHORONIDA (PHORONIDS) PHORONIS ARCHITECTA	1	0.169	0	0.0
MOLLUSCA (SHELLFISH) GASTROPODA (SNAILS)				
ACTECCINA CANALICULATA	1	0.169	0	0.0
ANACIS FLORICANA	1	0.169	0	0.0
NATICA PUSILLA	3	0.508	6	0.643
CLIVIA SAYANA	1	0.169	0	0.0
POLYKICES DUPLICATUS	4	0.678	1	0.107
TURBONILLA CONRADII	4	0.678	2	0.214
PELECYPODA (CLAMS)				
LUCINA MULTILINEATA	8	1.356	6	0.643
PERIGLIMA MARGARITACEUM	3	0.508	1	0.107
STIRIGILLA MIRABILIS	0	0.0	3	0.322
TELLINA ACQUISTRIATA	1	0.169	0	0.0
TELLINA VERSICOLOR	10	1.695	9	0.965
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	59	10.000	5	0.536
POLYCHAETA				
AGLAOPHANUS VERRILLI	2	0.339	1	0.107
AMPHARETE ACUTIFRONS	0	0.0	1	0.107
APOPENONOSPIS PYGMAEA	0	0.0	1	0.107
ARCTIDEA CERRILY	2	0.339	5	0.536
ARCTIDEA FRAGILIS	1	0.169	0	0.0
ARCTIDEA PHILBINAE	4	0.678	0	0.0
ARCTIDEA SLECTICA	1	0.169	0	0.0
ARCTIDEA TAYLORI	1	0.169	0	0.0
ARVANDIA AGILIS	4	0.678	10	1.072
BRANIA CLAVATA	0	0.0	5	0.536
BRANIA WELLEFFENSIS	0	0.0	2	0.214
CAPITELLA CAPITATA	0	0.0	1	0.107
CERATODELLIS IRITABILIS	0	0.0	2	0.214
CERATODELLIS MIRABILIS	0	0.0	3	0.322
CHILOPSIS SP.	1	0.169	0	0.0
ETEDEA LACTEA	1	0.169	0	0.0
GLYCERA AMERICANA	0	0.0	3	0.322
GLYCERA DIBRANCHIATA	3	0.508	1	0.107
NONIARA LITTOREA	2	0.339	0	0.0
CRYPTIS VITTATA	3	0.508	2	0.214
HAPLOSCOLOPLOS FOLIOSUS	2	0.339	0	0.0
HAPLOSCOLOPLOS FRAGILIS	5	0.847	0	0.0
HAPLOSCOLOPLOS ROBUSTUS	0	0.0	1	0.107
LOIMIA VIRIDIS	1	0.169	0	0.0
LUMBRINERIS CRUZENSIS	127	21.525	271	29.046
LUMBRINERIS TETRAURA	29	4.915	3	0.322
MACROCLYMENE ZONALIS	1	0.169	2	0.214
MEDIMASTUS CALIFORNIENSIS	5	0.847	0	0.0
MICROPHTHALMUS ABERRANS	0	0.0	1	0.107
MINUSPIO CIRRIFERA	1	0.169	0	0.0
NEPHIYS BUCERA	0	0.0	2	0.214
NEPHIYS PICTA	25	4.237	28	3.001

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 3/1/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
NOTOCRUSTUS HEMIPODUS	3	0.508	2	0.214
ONUPHIS ERENITA OCULATA	11	1.864	26	2.787
CRIBRINA RISEI	0	0.0	1	0.107
PARAINIDES LYRA	4	0.678	1	0.107
PARACNIS FULGENS	1	0.169	4	0.429
PHYLLODOCE ARENAE	1	0.169	1	0.107
POLYDORA SOCIALIS	0	0.0	1	0.107
PRIONOSPIS CRISTATA	29	4.915	146	15.648
PSEUOEURYTHOE AMBIGUA	0	0.0	1	0.107
RULLIERINERETIS MEXICANA	12	2.034	7	0.322
SCOLELEPIS SQUAMATA	5	0.847	6	0.643
SCOLELEPIS TEXANA	0	0.0	9	0.965
SCOLOPICS ARMIGER	43	7.288	48	5.145
SCOLOPICS RUBRA	2	0.339	0	0.0
STEGAMPA TENTACULATA	0	0.0	3	0.322
SPIO PETTIGOREAE	0	0.0	4	0.429
SPIOCHAE TOPTERIS OCULATUS	1	0.169	0	0.0
STYDIPHANES BOMBYX	57	9.661	112	12.004
 SIPYLACULICA (PEANUT WORMS)				
ASPIDOSIPHON SP.	0	0.0	1	0.107
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
ACANTHOHAUSTORIUS SP.	0	0.0	7	0.750
AMPHIPODA VERRILLI	3	0.508	3	0.322
LISTRIELLA SP.	2	0.339	4	0.429
MONOCILLODES SP.	1	0.169	4	0.429
PROTOMALASTORIUS SP.	0	0.0	12	1.286
PSEUDOMALASTORIUS SP.	2	0.339	0	0.0
PSEUDOPLAETY SCHINOPUS SP.	42	7.119	104	11.147
ZONCHERODIUM SP.	1	0.169	0	0.0
ZIRCA BISCCELLATUS	0	0.0	1	0.107
ANOMURA				
ALLOLINEA PARELLI	1	0.169	6	0.643
EXCEBAMIS PRAEFLONGUS	1	0.169	0	0.0
PAGURUS LONGICARPUS	1	0.169	1	0.107
BRACHYURA				
OVALIPES OCCELLATUS	2	0.339	5	0.536
SYNASSIA SAYANA	0	0.0	2	0.107
CARTILAGE				
HIPPOLYTE PLEURACANINA	1	0.169	0	0.0
CUMACEA				
CYCLAPSIS SP.	1	0.169	0	0.0
CYCLAPSIS VARIANS	1	0.169	7	0.750
OSTRACODA				
UNIDENTIFIED SP.	8	1.356	2	0.214
 ECHINODERMATA				
ASTERICIDEA (STARFISHES)				
ASTROPECIEN ARTICULATIS	2	0.339	0	0.0
MCLOTHUROIDEA (SEA CUCUMBERS)				
LEPTISYNAPTA SP.	9	1.525	0	0.0
OPHIURICIDEA (BRITTLE STARS)				
OPHICPHRAGMUS WURDEMANI	0	0.0	1	0.107
 CEPHALOCHORDATA (LANCELETS)				
BRANCHIOPHORIDA	3	0.508	1	0.107

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
3/1/77
(CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL PERCENT	NO. OF IND. (E.) TOTAL PERCENT
TOTALS	590	933
NO. SPECIES	64	62
NO. IND. PER M2	2360	3732
S-B INDEX - H' (LN)	3.0592	2.6117
EVENNESS - J	0.7356	0.6326

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
4/1/77

SPECIES	NO. OF IND. TOTAL	PERCENT	NO. OF IND. TOTAL	PERCENT
CNICARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	2	0.304	0	0.0
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	11	1.672	17	2.163
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	27	4.103	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
NATICA PUSILLA	0	0.0	1	0.127
TEREERA DISLOCATA	1	0.152	1	0.127
TURBONILLA CONRADI	1	0.152	0	0.0
PELECYPODA (CLAMS)				
ANATINA ANATINA	1	0.152	0	0.0
LUCINA MULTILINEATA	7	1.064	3	0.382
PERIPLUMA MARGARITACEUM	3	0.456	0	0.0
SOLENIA SP.	0	0.0	5	0.636
STRIGILLA MIRABILIS	2	0.304	0	0.0
TELLINA VERSICOLOR	11	1.672	13	1.654
ANNELIDA (SEGMENTED WORMS)				
CLIGCCHAETA				
UNIDENTIFIED SP.	31	4.711	10	1.272
PCLYCHAETA				
AGLACPHAMUS VERRILLI	1	0.152	0	0.0
APOPRIONCPIO PYGMAEA	1	0.152	2	0.254
ARICIDEA FAUVELI	3	0.456	5	0.636
ARMANDIA AGILIS	5	0.760	5	0.636
ARMANDIA MACULATA	2	0.304	1	0.127
ERANIA WELLELEIENSIS	5	0.760	0	0.0
CERATCAEREA MIRABILIS	0	0.0	2	0.254
CHONE SP.	1	0.152	2	0.254
CIRRATULIDAE UNIDENTIFIED SP.	0	0.0	1	0.127
DIOPATRA CUPREA	0	0.0	1	0.127
DISPPIO UNCINATA	20	3.040	4	0.509
ETEDONE LACTEA	1	0.152	2	0.254
GLYCERA AMERICANA	6	0.912	2	0.382
GLYCERA DIURANCHIAIA	1	0.152	1	0.127
GNOCACA LITOREA	1	0.152	0	0.0
GYPTIS BREVIPALPA	5	0.760	0	0.0
HAPLOSCOLEOPIOS FRAGILLIS	0	0.0	1	0.127
LUMBRINERIS CRUZENSIS	32	4.863	126	23.664
LUMBRINERIS ERECTA	0	0.0	1	0.127
LUMBRINERIS TETRAURA	10	1.520	1	0.127
MAGELONA LONGICORNIS	1	0.152	3	0.382
MAGELONA SP.	3	0.456	1	0.127
MEDICASTIUS CALIFORNIENSIS	1	0.152	3	0.382
NEPHIYS BUCERA	0	0.0	1	0.127
NEPHIYS PICTA	75	11.398	37	4.707
NOTOMASTIUS HEMIPODUS	0	0.0	2	0.254
ONIOPHIS EREMITA OCULATA	0	0.0	23	2.926
ONIOPHIS PALLICA	0	0.0	1	0.127
PARACNIDES LYRA	1	0.152	0	0.0
PARACNIDES FUGENS	8	1.216	1	0.127
PARAFRANCISPIC PINNATA	3	0.456	4	0.509
PHYLLOCOPE ARENAE	0	0.0	6	0.763
POLYCIREUS EXIMIUS	0	0.0	1	0.127

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 4/1/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<i>POLYDORA SOCIALIS</i>	1	0.152	1	0.127
<i>POLYDORA TETRABRANCHIA</i>	3	0.456	0	0.0
<i>PRIONOPSIC CRISTATA</i>	26	3.951	51	6.489
<i>PSEUDOCYRTHOE AMBIGUA</i>	1	0.152	0	0.0
<i>RULLIERINERIS MEXICANA</i>	6	0.912	2	0.254
<i>SCOLELEPIS TEXANA</i>	39	5.927	24	3.053
<i>ZCOLCPLS ARMIGER</i>	24	3.647	25	3.181
<i>ZCOLCPLS RUERA</i>	7	1.064	0	0.0
<i>SIGAMBRA BASSI</i>	4	0.608	1	0.127
<i>SIGAMBRA TENTACULATA</i>	0	0.0	2	0.254
<i>SPIC PETIBONEAE</i>	0	0.0	1	0.127
<i>SPICEMADES BOMBIX</i>	102	15.502	316	40.204
 <i>SIPUNCULIDA (PEANUT WORMS)</i>				
<i>GOLFINGIA TRICHOSEPHALA</i>	0	0.0	1	0.127
 <i>ARTHROPODA (CRUSTACEANS)</i>				
<i>AMPHIPODA</i>				
<i>ACANTHCHAUSTORIUS SP.</i>	14	2.128	0	0.0
<i>AMPELISCA VERRILLI</i>	0	0.0	1	0.127
<i>ERICHTHONIUS SP.</i>	13	1.976	0	0.0
<i>MONECULIDES SP.</i>	1	0.152	1	0.127
<i>PROTOCHAUSTORIUS SP.</i>	28	4.255	0	0.0
<i>PSEUDOPLATYISCHNOPUS SP.</i>	89	13.526	4	0.509
<i>UNIDENTIFIED SP.</i>	3	0.456	0	0.0
<i>ANOMURA</i>				
<i>ALBUNEA PARETII</i>	2	0.304	2	0.254
<i>CARIDEA</i>				
<i>HIPPOLYIE PLEURACANTHA</i>	1	0.152	0	0.0
<i>CUMACEA</i>				
<i>CYCLAPSIS SP.</i>	1	0.152	0	0.0
<i>CYCLAPSIS VARIANS</i>	4	0.608	1	0.127
<i>DESTRACODA</i>				
<i>UNIDENTIFIED SP.</i>	1	0.152	1	0.127
<i>TANAIDACEA</i>				
<i>UNIDENTIFIED SP.</i>	1	0.152	0	0.0
 <i>ECHINODERMATA</i>				
<i>ECHINOIDEA (SAND DOLLARS; URCHINS)</i>				
<i>MOIRA ATROPS</i>	1	0.152	0	0.0
 <i>CEPHALOCHORDATA (LANCLETS)</i>				
<i>BRANCHIOSTOMA FLORIDAE</i>	3	0.456	1	0.127
 TOTALS	658		786	
NO. SPECIES		57		52
NO. IND. PER M ²		2632		3144
S-B INDEX - H ¹ (LN)		3.0944		2.1706
EVENNESS - J		0.7654		0.5493

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
5/2/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.242
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	15	2.333	16	3.865
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	8	1.244	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
NATICA PUSILLA	0	0.0	1	0.242
TURBONILLA CONRADII	2	0.311	0	0.0
PELICYPODA (CLAMS)				
LEPTICA SP.	1	0.156	2	1.932
LUCIDA MULTILINEATA	4	0.622	2	0.483
SOLEPYA VELUM	1	0.156	0	0.0
STRIGILLA MIRABILIS	0	0.0	1	0.242
TELLINA TEXANA	0	0.0	1	0.242
TELLINA VERSICOLOR	9	1.400	0	0.0
ANNELIDA (SEGMENTED WORMS)				
CLIGOCHETA				
UNIDENTIFIED SP.	29	4.510	7	1.691
POLYCHAETA				
AMPHARETE ACUTIFRONS	0	0.0	1	0.242
ABDOPETONOSPIO PYGMAEA	0	0.0	2	0.483
ARICIDEA FAUVELI	4	0.622	5	1.208
ARICIDEA FRAGILIS	5	0.778	4	0.966
ARICIDEA PHILBINAE	0	0.0	1	0.242
ARMANDIA AGILIS	1	0.156	0	0.0
BRANIA WELLEFLEETENSIS	2	0.311	2	0.483
CAPITELLA CAPITATA	0	0.0	3	0.725
SERATINIFERIS MIRABILIS	2	0.311	5	1.208
CHICRE SP.	2	0.311	1	0.242
DISPLOCUNINATA	4	0.622	4	0.966
FEISNE LACTEA	0	0.0	2	0.483
GLYCERA AMERICANA	2	0.311	3	0.725
GYPTIS BREVIPALPA	3	0.467	0	0.0
HAPLISCILOPLIS FOLIOSUS	13	2.022	7	1.691
HAPLISCILOPLIS FRAGILIS	4	0.622	0	0.0
LOPIPIA MEDUSA	1	0.156	0	0.0
LUMBFINERIS TENUIS	91	12.597	62	14.976
LUMBFINERIS TENUIS	15	2.333	33	0.725
PAGELLINA LONGICOENIS	1	0.156	2	0.483
PAGELLINA SP.	5	0.778	3	0.725
NEOTONMASTUS CALIFORNIENSIS	3	0.467	2	0.483
NEPHIYS EUCERA	1	0.156	1	0.242
NEPHIYS PICTA	90	13.997	58	14.010
NOTOMASTUS HEMIPODUS	1	0.156	22	0.483
ONUPPSIS EREMITA OCULAIA	0	0.0	5	1.208
OPHELIA SP.	2	0.311	0	0.0
PARACNIDES LYRA	5	0.778	1	0.242
PARACNIDES FULGENS	1	0.156	0	0.0
PARAPRIONOSPIO PINNATA	3	0.467	50	12.077
PHYLLODCE ARENAE	3	1.244	9	2.174
PODARKE OBSCURA	0	0.0	1	0.242
POECILOCHAECUS JOHNSONI	0	0.0	1	0.242
PRIONOSPIO CRISTATA	14	2.177	10	2.415

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 5/2/77
 (CONTINUED)

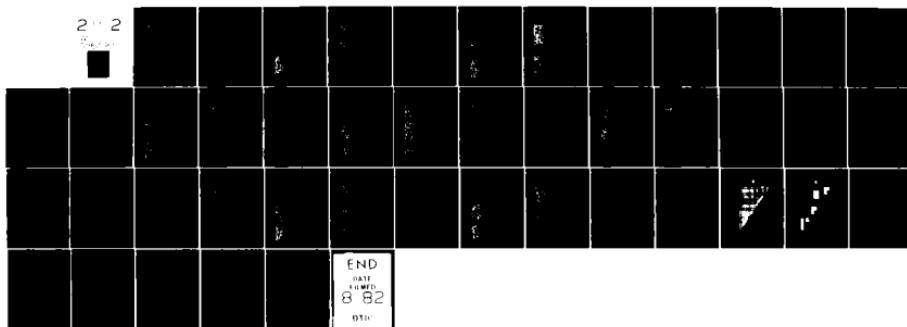
SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<i>RULLIERINERIS MEXICANA</i>	4	0.622	2	0.483
<i>SCOLELEPIS TEXANA</i>	2	0.311	1	0.242
<i>SCOLEPLCS ARMIGER</i>	0	0.0	3	0.725
<i>SCOLOPLOS RUBRA</i>	0	0.0	14	3.382
<i>SIGAMERA BASSI</i>	1	0.156	0	0.0
<i>SIGAMERA TENTACULATA</i>	1	0.156	0	0.0
<i>SPIO PETTIBONEAE</i>	11	1.711	0	0.0
<i>SPLOPPLANES BOMBYX</i>	157	24.417	89	21.458
<i>STHENELAIS BOA</i>	0	0.0	1	0.242
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<i>AMPELISCA ADDITA</i>	0	0.0	1	0.242
<i>AMPELISCA VERRILLI</i>	9	1.400	0	0.0
<i>LISTERELLA SP.</i>	3	0.467	1	0.242
<i>MICROPROTOPUS SP.</i>	0	0.0	1	0.242
<i>PROTOFAUSTORIUS SP.</i>	0	0.0	2	0.483
<i>PROFAUSTORIUS SP.</i>	1	0.156	0	0.0
<i>PRODUDPLATYISCHNOPUS SP.</i>	92	14.308	0	0.0
<i>SYNCHILOIDIUM SP.</i>	4	0.622	2	0.483
BRACHYURA				
<i>CHICCOMAPIS CALCARATA</i>	0	0.0	1	0.242
<i>PIERISIA LUNZI</i>	1	0.156	0	0.0
<i>PIERISIA SAYANA</i>	1	0.156	0	0.0
CARIDEA				
<i>PROCESSA MEMPHILLI</i>	1	0.156	0	0.0
CLINACEA				
<i>CYCLAPSIS SP.</i>	1	0.156	1	0.242
<i>CYCLAPSIS VARIANS</i>	4	0.622	1	0.242
OSTRACODA				
<i>LAEGYCTERIDEA SEPTIPUNCTATA</i>	3	0.467	0	0.0
UNIDENTIFIED SP.	1	0.156	1	0.242
ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
<i>ASTROPECTEN ARTICULATUS</i>	1	0.156	2	0.483
OPHTHURIDAE (BRITTLE STARS)				
UNIDENTIFIED SP.	0	0.0	1	0.242
HEMICHORDATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	1	0.156	0	0.0
CEPHALOCHORDATA (LANCELETS)				
<i>BRANCHIOSIOMA FLORIDAE</i>	2	0.311	3	0.725
TOTALS				
NO. SPECIES	643	55	414	54
NO. IND. PER M ²		2572		1656
S _b INDEX - H ² (LN)		2.7186		2.6260
EVENNESS - J		0.6784		0.7085

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
6/1/77

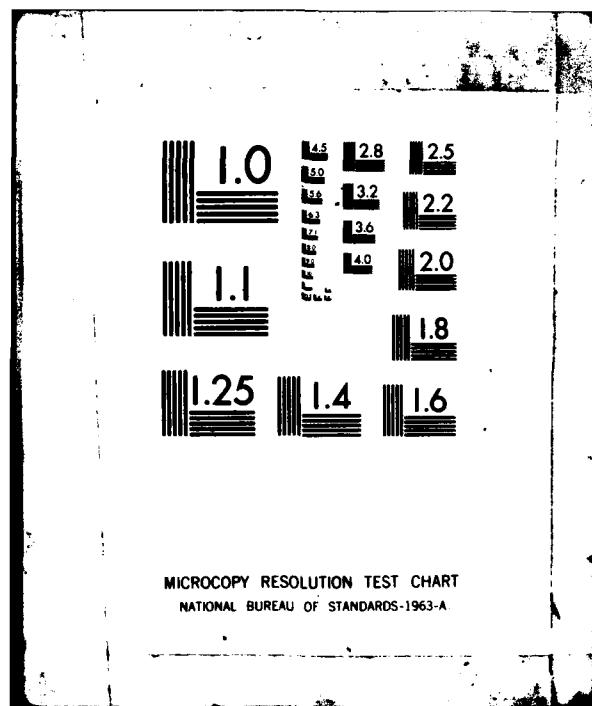
SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
NEMERTINEA (RIBBON WORMS) UNIDENTIFIED SP.	15	3.846	26	3.194
NEMATODA (ROUNDWORMS) UNIDENTIFIED SP.	4	0.810	0	0.0
PHORONIDA (PHORONIDS) <u>PHORONIS ARCHITECTA</u>	0	0.0	2	0.246
MOLLUSCA (SHELLFISH) GASTROPODA (SNAILS)				
<u>CYLICINELLA BIDENTATA</u>	2	0.405	1	0.123
<u>DIASTICMA VARIUM</u>	0	0.0	1	0.123
PELECYPODA (CLAMS)				
<u>ANADARA FLORIDANA</u>	0	0.0	1	0.123
<u>CUMINGIA TELLINOIDES</u>	0	0.0	4	0.491
<u>LEPTAENA SF.</u>	0	0.0	57	7.002
<u>LUCINA MULTILINEATA</u>	16	3.239	33	4.054
<u>MACTRA SP.</u>	0	0.0	1	0.123
<u>PITAR SIMPSONI</u>	4	0.810	0	0.0
<u>STRIGILLA MIRABILIS</u>	1	0.202	0	0.0
<u>TELLINA TEXANA</u>	0	0.0	2	0.246
<u>TELLINA VERSICOLOR</u>	17	3.441	59	7.248
<u>VENERIUM UNIDENTIFIED SP.</u>	0	0.0	3	0.369
ANNELIDA (SEGMENTED WORMS)				
CLIGONCHAETA				
UNIDENTIFIED SP.	23	4.656	24	2.948
PCLYCHAETA				
<u>AMPHARETE ACUTIFRONS</u>	0	0.0	1	0.123
<u>APOPRIONOSPIS PYGMAEA</u>	0	0.0	3	0.369
<u>ARICICEA FAUVELI</u>	4	0.810	3	0.369
<u>ARICIDEA FRAGILIS</u>	1	0.202	2	0.246
<u>ARMANDIA MACULATA</u>	0	0.0	3	0.369
<u>BRANIA WELLFLEETENSIS</u>	1	0.202	0	0.0
<u>CAPITELLA CAPITATA</u>	0	0.0	1	0.123
<u>CERATONEREIS IRRITABILIS</u>	0	0.0	1	0.123
<u>CERATONEREIS MIRABILIS</u>	0	0.0	2	0.246
<u>CHONE SP.</u>	9	1.822	4	0.491
<u>DIDOPATRA CUPREA</u>	0	0.0	11	1.351
<u>DISPLOUNCINATA</u>	0	0.0	4	0.491
<u>EETONE LACTEA</u>	4	0.810	5	0.614
<u>GLYCERA AMERICANA</u>	12	2.429	14	1.720
<u>GLYCERA DIBRANCHIATA</u>	0	0.0	1	0.123
<u>GLYCINDE SOLITARIA</u>	0	0.0	3	0.369
<u>GOONIADA LITTOREA</u>	3	0.607	0	0.0
<u>GYPTIUS VITTATA</u>	0	0.0	1	0.123
<u>HAPLOCYCLOPODS FOLIOSUS</u>	7	1.417	11	1.351
<u>HAPLOCYCLOPODS FRAGILIS</u>	0	0.0	1	0.123
<u>HARMOIHOE LUNULATA</u>	1	0.202	0	0.0
<u>LUMBRINERIS CRUZENSIS</u>	29	5.870	51	6.265
<u>LUMBRINERIS TETRAURA</u>	9	1.822	6	0.737
<u>MAGELLANA SP.</u>	4	0.810	0	0.0
<u>MEDICASTUS CALIFORNIENSIS</u>	0	0.0	6	0.737
<u>MINUSIELLA CIRRIFERA</u>	0	0.0	3	0.369
<u>MYRICHELE SP.</u>	0	0.0	1	0.123
<u>NEPHYTIS BUCERA</u>	10	2.024	0	0.0
<u>NEPHYTIS PICTA</u>	99	20.040	150	18.428
<u>NOTCASTUS HEMIPODUS</u>	2	0.405	0	0.0
<u>SNUPHIS ERMITA OCELLATA</u>	27	5.466	26	3.194

AD-A116 340 NATIONAL MARINE FISHERIES SERVICE PANAMA CITY BEACH F--ETC F/G 8/1
BENTHIC COMMUNITY RESPONSE TO DREDGING BORROW PITS, PANAMA CITY--ETC(U)
MAR 82 C M SALOMAN, S P NAUGHTON, J L TAYLOR DACW72-81-M-0198
UNCLASSIFIED CERC-MR-82-3 NL

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TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 6/1/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
ONIOPHIS PALLIDA	1	0.202	0	0.0
PARAIAITES SPECIOSA	1	0.202	0	0.0
PARACNIDES LYRA	6	1.215	6	0.737
PARAPRIONOSPIO PINNATA	0	0.0	27	3.317
PHYLLODOCE ARENAE	2	0.405	5	0.614
PRIONOSPIO CRISTATA	21	4.251	84	10.319
RULLIERINAEIS MEXICANA	5	1.012	1	0.123
SCALELEPIS TEXANA	5	1.012	7	0.860
SIGAMBARA BASSI	1	0.202	0	0.0
SIGAMBARA TENTACULATA	0	0.0	9	1.106
SPIDIO PETTIBONEAE	8	1.619	0	0.0
SPIONOPHANES DOMOYX	18	3.644	50	6.143
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
ACANTHOHAUSTORIUS SP.	20	4.049	0	0.0
AMPELISCA ABDITA	0	0.0	22	0.369
AMPELISCA VADORUM	0	0.0	22	0.246
AMPELISCA VERRILLI	14	2.834	22	0.369
ARGISSA SP.	0	0.0	22	0.246
LEPTACTYLUS SP.	0	0.0	1	0.123
LISTERIELLA SP.	3	0.607	0	0.0
LYSTANOPSIUS SP.	1	0.202	1	0.123
PROTOHAUSTORIUS SP.	10	2.024	1	0.123
PSEUDOMAUSTORIUS SP.	3	0.607	0	0.0
PSEUDOPLATYCHONOPSIS SP.	16	3.239	22	2.703
SYNCELIDIUM SP.	9	1.822	4	0.491
ANOMURA				
ALBUNEA PARETII	0	0.0	1	0.123
BRACHYURA				
CVALIFES CCELLATUS	1	0.202	1	0.123
PINNIXIA CYLINDRICA	0	0.0	1	0.123
PINNIXIA RETINENS	2	0.405	1	0.123
PINNIXIA SAYANA	1	0.202	0	0.0
CARIDEA				
PROCESSA MEMPHILLI	2	0.405	5	0.614
CUMACEA				
CYCLAPSIS SP.	3	0.607	1	0.123
CYCLAPSIS VARIANS	9	1.822	10	1.229
OXYUROSTYLIS SMITHI	0	0.0	14	1.720
LEPTOSTRACA				
NEBALIA SP.	1	0.202	1	0.123
MYSIDACEA				
UNIDENTIFIED SP.	1	0.202	0	0.0
OSTRACOCA				
SARCIELLA CHILDII	0	0.0	1	0.123
PENAEIDEA				
SICYCNIA BREVIROSTRIS	0	0.0	1	0.123
 ECHINODEMATA				
ASTEROIDEA (STARFISHES)				
ASTROPECTEN ARTICULATUS	1	0.202	0	0.0
ECHINOCHEA (SAND DOLLARS; URCHINS)				
LYTECHINUS VARIEGATUS	1	0.202	0	0.0
MELITIA QUINTQUESPERFORATA	7	1.417	8	0.983
OPHYLACTOIDEA (BRITTLE STARS)				
UNIDENTIFIED SP.	5	1.012	12	1.474
 CEPHALOCHIRICATA (LANCELETS)				
BRANCHIOSOMA FLORIDA	8	1.619	1	0.123

APPENDIX B (CONTINUED)

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 6/1/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL PERCENT	NO. OF IND. (E.) TOTAL PERCENT
TOTALS	494	814
NO. SPECIES	55	69
NO. IND. PER M ²	1976	3256
S-B INDEX - H'(LN)	3.3330	3.1985
EVENNESS - J	0.8317	0.7554

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
7/5/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNEARIA				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	0	0.0	1	0.204
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	3	0.368	0	0.0
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	25	3.064	15	3.055
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	5	0.613	0	0.0
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTEOCINA CANDEI	28	3.431	0	0.0
CYLICINELLA BIDENTATA	0	0.0	1	0.204
NATICA PUSILLA	0	0.0	1	0.204
POLINICES DUPLICATUS	0	0.0	1	0.204
PELECYPODA (CLAMS)				
LAEVICARDIUM MORTONI	1	0.123	0	0.0
LEPTA SP.	10	1.225	0	0.0
LUCINA MULTILINEATA	73	8.946	25	5.092
MARICALLISTA MACULATA	2	0.245	0	0.0
PERIPLOMA MARGARITACEUM	3	0.368	0	0.0
TELLINA AEQUISTRIGATA	3	0.368	2	0.407
TELLINA TEXANA	14	1.716	14	2.851
TELLINA VERSICOLOR	81	9.926	58	11.813
VENERIDAE UNIDENTIFIED SP.	2	0.245	0	0.0
ANNELIDA (SEGMENTED WORMS)				
CLIGOCHETA				
UNIDENTIFIED SP.	14	1.716	1	0.204
POLYCHAETA				
APOPHIONOSPIA PYGMAEA	2	0.245	2	0.407
ARICIDEA CERRUTII	0	0.0	1	0.204
ARICIDEA FAUVELI	3	0.368	6	1.222
ARICIDEA FRAGILIS	4	0.490	2	0.407
ARICIDEA SUECTICA	0	0.0	1	0.204
ARMANDIA AGILIS	0	0.0	2	0.407
ARMANDIA MACULATA	0	0.0	1	0.204
CERATONEREIS IRRITABILIS	0	0.0	1	0.204
CHONE SP.	14	1.716	3	0.611
CIRRIPHORUS LYRIFORMIS	0	0.0	1	0.204
DISPIGUNCINATA	0	0.0	3	0.611
ETEDONE LACTEA	5	0.613	1	0.204
GLYCERA AMERICANA	41	5.025	16	3.259
GLYCERA DIBRANCHIATA	0	0.0	1	0.204
MONIADA LITOREA	8	0.980	11	2.240
GRIMBELEPIS MEXICANA	1	0.123	0	0.0
CYDIA VULGATA	1	0.123	0	0.0
HAPLOSCOLEOPLS FOLIOSUS	6	0.735	1	0.204
HAPLOSCOLEOPLS FRAGILIS	1	0.123	0	0.0
LUMBRICERIS CRUZENSIS	154	18.873	90	18.330
LUMBRICERIS TETRAURA	24	2.941	1	0.204
NEODONCIUS CALIFORNiensis	3	0.368	1	0.204
HYPOCRYPHTHALMUS SP.	2	0.245	0	0.0
NEPHIYS BUCERA	2	0.245	0	0.0
NEPHIYS PICIA	112	13.725	129	26.273

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 7/5/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
NOTOMASILIS HEMIPODUS	2	0.245	1	0.204
ONUPHIS EREMITA OCULATA	22	2.696	10	2.037
OWENIA FUSIFORMIS	9	1.103	0	0.0
PARANAITES SPECIOSA	1	0.123	0	0.0
PARACNIDES LYRA	10	1.225	26	5.295
PARACNIDES FUGENS	1	0.368	0	0.0
PARAPRIONOSPIG PINNATA	2	0.245	8	1.629
PHYLLODUCUS ARENAE	2	0.245	2	0.407
PRIONOSPIG CRISTATA	13	1.593	5	1.018
RILLIERINERIS MEXICANA	1	0.123	0	0.0
SCOLELEPIS TEXANA	1	0.123	0	0.0
SCOLEOPLOS RUBRA	2	0.245	0	0.0
SIGALICA AFENICOLA	1	0.123	0	0.0
SPICIFHANES BOMBIX	1	0.123	13	2.648
SIPUNCULIDA (PEANUT WORMS)				
UNIDENTIFIED SP.	1	0.123	0	0.0
ARTHROPODIDA (CRUSTACEANS)				
AMPHIPODA				
ACANTHOPODIAUSTORIUS SP.	1	0.123	0	0.0
AMPELISCA VADORUM	1	0.123	0	0.0
AMPELISCA VERRILLI	9	1.103	7	1.426
ARGISSA SP.	1	0.123	0	0.0
LISTEJELLA SP.	4	0.490	2	0.407
MICROPROTOCUS SP.	3	0.368	0	0.0
MONGULOIDES SP.	1	0.123	0	0.0
PSEUCOPLATYTSCHNOPODUS SP.	22	2.696	1	0.204
SYNCHELIDIUM SP.	21	2.574	0	0.0
UNIDENTIFIED SP.	1	0.123	0	0.0
ANOMURA				
ALBUNEA PARELLI	0	0.0	1	0.204
BRACHYLRA				
PINNIXIA CHAETOPTERANA	1	0.123	0	0.0
PINNIXIA RETINENS	3	0.368	0	0.0
CARIDEA				
OXYRIDES ALPHAEOSTRIS	0	0.0	1	0.204
SYNALPEUS SP.	0	0.0	1	0.204
CUMACEA				
CYCLAEFIS SP.	2	0.245	0	0.0
CYCLAEFIS VARIANS	15	1.838	4	0.815
OXYLEISTYLIS SMITHI	0	0.0	2	0.407
PEMAEDEA				
PENAEUS DUORARUM	1	0.123	2	0.407
ECHINODERMATA				
ASTEROIDEA (STARFISHES)				
ASTROPECIEN ARTICULATUS	0	0.0	1	0.204
ECYPHOIDEA (SAND DOLLARS; URCHINS)				
MELITA QUINQUESPERFICATA	2	0.245	0	0.0
HOLCOTHETIDEA (SEA CUCUMBERS)				
LEPTOSYNAPTA SP.	0	0.0	10	2.037
OPHIURIDEA (BRITTLE STARS)				
UNIDENTIFIED SP.	0	0.0	1	0.204
HEMICHORICATA				
ENTEROPNEUSTA (ACRON WORMS)				
UNIDENTIFIED SP.	2	0.245	0	0.0
CEPHALOCHOREATA (LANCELETS)				
BRANCHIOSOMA FLORIDA	98	0.980	0	0.0

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
7/5/77
(CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
TOTALS	816		491	
NO. SPECIES	64		49	
NO. IND. PER M ²	3264		1564	
S-D INDEX - H ⁰ (LN)	3.0767		2.6678	
EVENNESS - J	0.7398		0.6255	

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
8/2/77

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
CNICARIA ACTINIARIA (SEA ANEMONES) UNIDENTIFIED SP.	0	0.0	1	0.137
PLATYHELMINTHES TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	11	0.851	3	0.411
NEMERTINEA (RIBBON WORMS) UNIDENTIFIED SP.	33	2.554	16	2.192
BRACHIOPODA (LAMP SHELLS) <u>GLOTTIDIA PYRAMIDATA</u>	3	0.232	0	0.0
MOLLUSCA (SHELLFISH) GASTROPODA (SNAILS)				
ACTECCINA CANDEI	9	0.697	8	1.096
CYLINCINELLA BIDENTATA	0	0.0	73	10.000
DIASTOMA VARIXUM	24	1.858	0	0.0
NATICA PUSILLA	10	0.774	2	0.274
POLINICES DUPLICATUS	1	0.077	0	0.0
TEREERA DISLOCATA	1	0.077	0	0.0
TURBELLARIA CONRADI	3	0.232	1	0.137
PELECYPODA (CLAMS)				
ANADARA FLORICANA	0	0.0	3	0.411
ERYLLIA CONCENTRICA	26	2.012	0	0.0
LUCINA MULTILINEATA	31	2.399	15	2.055
NUCOLANA ACUTA	0	0.0	6	0.822
TELLINA ACQUISTRIGATA	6	0.464	5	0.685
TELLINA TAMPAENSIS	1	0.077	9	1.233
TELLINA TEXANA	0	0.0	6	0.822
TELLINA VERSICOLOR	180	13.932	102	13.973
<u>TRACHYCARDIUM HURICATUM</u>	4	0.310	1	0.137
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	18	1.393	0	0.0
POLYCHAETA				
APOPRIONOSPIA PYGMAEA	3	0.232	1	0.137
ARICIDEA CERRUTI	1	0.077	0	0.0
ARICIDEA FRAGILIS	3	0.232	0	0.0
ARMANDIA MAGULATA	12	0.929	3	0.411
BRANCHICASYCHIS AMERICANA	0	0.0	5	0.685
CERATONEEREIS IRRITABILIS	2	0.155	18	2.466
CHONE SP.	31	2.399	0	0.0
CISIENIDES GOULDII	0	0.0	1	0.137
DIOPATRA CUPREA	0	0.0	33	4.521
DORVILLEA SOCIABILIS	3	0.232	0	0.0
ENOPLODORANCHUS SANGUINEUS	1	0.077	0	0.0
ETEONE LACTEA	9	0.697	0	0.0
GLYCERA AMERICANA	35	2.709	0	0.0
GLYCERA DIBRANCHIAIA	7	0.542	4	0.548
GLYCINDE SOLITARIA	0	0.0	4	0.548
GONIADA LITTOREA	10	0.774	1	0.137
CYPRIUS GREVILLAE	4	0.310	0	0.0
HAPLOSKOLOPLOS FRAGILIS	1	0.077	0	0.0
HARMONIAE AMERICATA	0	0.0	1	0.137
EDOMIA MEDUSA	3	0.232	3	0.411
LUMBRINERIS CRUZENSIS	373	28.870	2	1.096
LUMBRINERIS JEYRAURA	21	1.625	1	0.137

TREASRE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 8/2/77
 (CONTINUED)

SPECIES	NO. OF IND.	(C:1 TOTAL PERCENT)	NO. OF IND.	(E:1 TOTAL PERCENT)
MAGELCNA LONGICORNIS	0	0.0	2	0.274
MEDONASTUS CALIFORNIENSIS	0	0.0	10	1.370
MESOCHAEYOPTERUS SAGITTARIUS	10	0.774	24	3.288
MINUSPILO CIRRIFERA	0	0.0	3	0.411
NEANthes SUCCINEA	0	0.0	14	1.918
NEPHIYS BUCERA	4	0.310	0	0.0
NEPHIYS PICTA	65	5.031	7	0.959
NEREIS SP.	0	0.0	1	0.137
NOTOMASTUS HEMIPODUS	4	0.310	3	0.411
ONOPHIS EREMITA OCELLATA	16	1.238	4	0.548
OWENIA FUSIFORMIS	1	0.077	1	0.137
PARACNIDES LYRA	15	1.161	2	0.274
PARACNIDES FULGENS	4	0.310	0	0.0
PARAPRIONOSPILO PINNATA	0	0.0	11	1.507
PHYLLODOCE ARENAE	9	0.697	4	0.548
POLYDORA SOCIALIS	0	0.0	2	0.274
POLYDORA TETRARRHACHIA	1	0.077	0	0.0
PRIONOSPILO CRISTATA	96	7.430	75	10.274
PSEUDOFURYTHOE AMBIGUA	1	0.077	0	0.0
RULLIFERINERIS MEXICANA	2	0.155	1	0.137
SIGAMMRA BASSI	1	0.077	0	0.0
SIGAMMRA TENTACULATA	2	0.155	109	14.932
SPIO PETTIBONEAE	6	0.464	0	0.0
SPLOPHANES BOMBYX	6	0.464	0	0.0
STHENELEAIS BOA	0	0.0	3	0.411
STREPISYLLIS ARENAE	1	0.077	0	0.0
SIPUNCULIDA (PEANUT WORMS)				
UNIDENTIFIED SP.	1	0.077	1	0.137
ECHIURIDA (ECHIURIDS)				
UNIDENTIFIED SP.	0	0.0	3	0.411
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
ACANTHOHAUSTORIUS SP.	1	0.077	0	0.0
AMPELISCA VERRILLI	46	3.560	9	1.233
ERICTHONIUS SP.	1	0.077	2	0.274
LYSTRELLA SP.	0	0.0	2	0.274
PSEUDOPLATYTSCHNOPUS SP.	20	1.548	1	0.137
SYNCELIUM SP.	20	1.548	6	1.096
ANOMURA				
ALBIDEA PARELLI	2	0.155	0	0.0
BRACHYURA				
CSACHILA TURFOSA	2	0.155	0	0.0
FANIFUS HERESTRI	0	0.0	8	1.096
PINNIXIA EFTINENS	2	0.155	0	0.0
PINNIXIA SP.	0	0.0	2	0.274
PINNIXIA OSTREUM	1	0.077	0	0.0
PORTUNUS SAYI	0	0.0	6	0.822
CALLIATASIDAE				
CALLIANASSA JAMAICENSIS	1	0.077	1	0.137
CARTDEA				
LATREUTES PARVULUS	0	0.0	3	0.411
PROCTOSA FEBRILIS	6	0.464	4	0.548
CUMACEA				
CYCLAESIS SP.	6	0.464	1	0.137
CYCLAESIS VARIANS	8	0.619	9	1.233
PAUCISETOSIS SEATHI	9	0.697	1	0.137
ISCPEDA				
APANIHURA MAGNIFICA	1	0.077	0	0.0

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 8/2/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
LEPTOSTRACA				
<u>NEBALIA SP.</u>	8	0.619	2	0.274
MYSTIDAEA				
<u>MYSTICPSIS BIGELOWI</u>	3	0.232	0	0.0
OSTRACCCA				
<u>UNIDENTIFIED SP.</u>	4	0.310	7	0.959
PENAIDEA				
<u>ACETES AMERICANUS</u>	2	0.155	0	0.0
<u>SICYGNIA SP.</u>	1	0.077	1	0.137
<u>TRACHYPENAEUS CONSTRICTUS</u>	0	0.0	11	1.507
ECHINODERMATA				
ECHINICIDEA (SAND DOLLARS; URCHINS)				
<u>LYTECHINUS VARIEGATUS</u>	2	0.155	0	0.0
<u>MOTRA ATROPS</u>	2	0.155	34	4.658
HOLOTHUROIDEA (SEA CUCUMBERS)				
<u>LEPTOSYNAPTA SP.</u>	4	0.310	2	0.274
OPHIURIDEA (BRITTLE STARS)				
<u>HEMIPHOLIS ELEGANTIA</u>	0	0.0	1	0.137
<u>MICROPHOLIS GRACILLIMA</u>	2	0.155	0	0.0
<u>OPHIOPHRAGMUS BURDEMANI</u>	1	0.077	0	0.0
HEMICHORDATA				
ENTEROPHELISTA (ACORN WORMS)				
<u>UNIDENTIFIED SP.</u>	1	0.077	1	0.137
CEPHALOCHORDATA (LANCELETS)				
<u>BRANCHISTOMA FLORIDA</u>	10	0.774	0	0.0
VERTEBRATA				
PISCES (FISHES)				
<u>GOBIOIDAE. UNIDENTIFIED SP.</u>	1	0.077	0	0.0
TOTALS				
NO. SPECIES	1292		730	
NO. IND. PER M ²		80		70
S-W INDEX - H ² (LN)		5168		2920
EVENNESS - J		3.0096		3.2331
		0.6868		0.7610

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
9/1/77

SPECIES	NO. OF IND. (C ₁) TOTAL PERCENT	NO. OF IND. (E ₁) TOTAL PERCENT
CNICARIA		
ACTINIARIA (SEA ANEMONES)		
UNIDENTIFIED SP.	1 0.112	2 1.818
PLATYHELMINTHES		
TURBELLARIA (FLATWORMS)		
UNIDENTIFIED SP.	1 0.112	0 0.0
NEMERTINEA (RIBBON WORMS)		
UNIDENTIFIED SP.	26 2.912	5 4.545
NEPHTHYS (ACONCHILLES)		
UNIDENTIFIED SP.	5 0.560	0 0.0
MOLLUSCA (SHELLFISH)		
GASTROPODA (SNAILS)		
ACTEOFICINA CANDEI	6 0.448	0 0.0
ANACFIS FLORIDANA	3 0.336	0 0.0
CYLICHNELLA BIDENTATA	3 0.336	0 0.0
DIASTOMA VARIUM	116 12.990	0 0.0
NASSARIA ACUTUS	0 0.0	9 8.182
NATICIA PLSILLA	4 0.448	2 1.818
TERFERA DISLOCATA	4 0.448	2 1.818
TURBONILLA CONRADI	1 0.112	0 0.0
PELECYPODA (CLAMS)		
ANADARA FLORIDANA	0 0.0	1 0.909
ERVILIA CONCENTRICA	28 3.135	0 0.0
LUCINA MULTILINEATA	9 1.008	0 0.0
NUCULANA ACUTA	0 0.0	1 0.909
PERIPLICMA MARGARITACEUM	15 1.680	0 0.0
TELLINA AEQUISTRATA	4 0.448	0 0.0
TELLINA TEXANA	6 0.672	7 6.364
TELLINA VERSICOLOR	138 15.454	13 11.818
ANNELIDA (SEGMENTED WORMS)		
OLIGOCHAETA		
UNIDENTIFIED SP.	18 2.016	1 0.909
POLYCHAETA		
AGLACPHAMUS VERRILLI	1 0.112	0 0.0
APODEIONOPSIS PYGMAEA	2 0.224	1 0.909
ARICIDEA FAUVELI	4 0.448	0 0.0
ARICIDEA FRAGILIS	2 0.224	0 0.0
ARICIDEA SUECICA	1 0.112	0 0.0
ARMANIA AGILIS	1 0.112	0 0.0
BRANIA WELLFLEETENSIS	3 0.336	0 0.0
CAPITELLA CAPITATA	0 0.0	1 0.909
CAULERIELLA SP.	1 0.112	0 0.0
CERATONEREIS IBBITABILIS	0 0.0	4 3.636
CHONE SP.	13 1.456	0 0.0
DIOMATRA CUPREA	0 0.0	3 2.727
DRIESCHIA PELLUCIDA	0 0.0	1 0.909
ETEONE LACTEA	33 0.336	0 0.0
GLYCERA AMERICANA	33 0.336	0 0.0
GLYCERA DIBRANCHIATA	10 1.120	2 1.818
GLYCINDE SOLITARIA	0 0.0	1 0.909
SCNIOAGA LITIGREA	7 0.784	0 0.0
HAPLOCYCLOPS FOLIOSUS	2 0.224	0 0.0
LOPILIA VIRIDIS	1 0.112	0 0.0
LUMINETRIS CRUZENSIS	252 28.219	1 0.909
LUMINETRIS TETRAHEDRA	8 0.896	0 0.0

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 9/1/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
<u>MEDICINA STUS CALIFORNIENSIS</u>	1	0.112	0	0.0
<u>MESENCHYMATOPTERUS SAGITTARIUS</u>	1	0.112	0	0.0
<u>NEANTHES ACUMINATA</u>	1	0.112	0	0.0
<u>NEANTHES SUCCINEA</u>	0	0.0	1	0.909
<u>NEPHIYS PICTA</u>	14	1.568	1	0.909
<u>NOTOMASTIS HEMIPODUS</u>	5	0.560	1	0.909
<u>ONUPHIS FREIGHTA OCULATA</u>	22	2.464	1	0.909
<u>ONYXIA FLSIFORMIS</u>	1	0.112	0	0.0
<u>PARACNIDES LYRA</u>	25	2.800	0	0.0
<u>PARAFRANCISPIO PINNATA</u>	0	0.0	5	4.545
<u>PHYLLOCOCE ARENAE</u>	6	0.672	0	0.0
<u>PRIONCSPIC CRISTATA</u>	2	0.224	0	0.0
<u>PSEUODEURYTHME AMBIGUA</u>	1	0.112	0	0.0
<u>RULLIERELEIS MEXICANA</u>	10	1.120	2	1.818
<u>SCOLELEFIS TEXANA</u>	3	0.336	0	0.0
<u>SIGAMERA BASSI</u>	1	0.112	0	0.0
<u>SIGAMERA TENTACULATA</u>	0	0.0	1	0.909
<u>SPIOPHANES BOMBYX</u>	1	0.112	0	0.0
 SIPUNCULIDA (PEANUT WORMS)				
<u>GOLEINGIA TRICHOCEPHALA</u>	1	0.112	0	0.0
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>ACANTHOHAUSTORIUS SP.</u>	3	0.336	0	0.0
<u>AMPELISCA VERRILLI</u>	6	0.672	0	0.0
<u>LEPTACIYLUS SP.</u>	2	0.224	0	0.0
<u>LISTERIELLA SP.</u>	1	0.112	0	0.0
<u>PSEUDOPLATYPSCHNOPUS SP.</u>	28	3.135	0	0.0
<u>SYNTELIDIUM SP.</u>	13	1.456	0	0.0
ANOMURA				
<u>ALBUNEA PARETII</u>	2	0.224	0	0.0
<u>PAGURUS LONGICARPUS</u>	5	0.560	0	0.0
BRACHYURA				
<u>PINIXIA SAYANA</u>	0	0.0	1	0.909
CUMACEA				
<u>CYCLAPSIS SP.</u>	2	0.224	0	0.0
<u>CYCLAPSIS VARIANS</u>	14	1.568	0	0.0
ISCOPDA				
<u>EDOTEA MCNIOSA</u>	1	0.112	0	0.0
MYSTIDAEA				
<u>BOWMANIELLA SP.</u>	0	0.0	2	1.818
<u>MYSTIDOPSIS BIGELOWI</u>	0	0.0	2	1.818
UNIDENTIFIED SP.	1	0.112	0	0.0
OSTRACODA				
UNIDENTIFIED SP.	1	0.112	0	0.0
PENAEIDEA				
<u>ACETES AMERICANUS</u>	0	0.0	2	1.818
 ECHINODERMA				
ECHINOIDEA (SAND DOLLARS; URCHINS)				
<u>MOIBA ATECES</u>	1	0.112	0	0.0
<u>PELLITA QUINQUIESPERFORATA</u>	6	0.672	0	0.0
HCLOTHURCTDEA (SEA CUCUMBERS)				
<u>LEPTOSYNAPTA SP.</u>	0	0.0	1	0.909
OPHTHURCTDEA (BRITTLE STARS)				
<u>HEMIPIOLIS ELONGATA</u>	0	0.0	28	25.455
<u>HICHIPIOLIS GRACILLIMA</u>	3	0.336	0	0.0
 HEMICRDATA				
ENTEROPNEUSTA (ACRON WORMS)				

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 9/1/77
 (CONTINUED)

SPECIES	NO. OF IND. (C ₁)		NO. OF IND. (E ₁)	
	TOTAL	PERCENT	TOTAL	PERCENT
UNIDENTIFIED SP.	1	0.112	5	4.545
CEPHALOCHORDATA (LANCELETS) <i>BRANCHIOSTOMA FLORIDAE</i>	6	0.672	0	0.0
VERTEBRATA PISCES (FISHES) <i>SYMPLECTUS SP.</i>	2	0.224	0	0.0
TOTALS	893	70	110	32
NO. SPECIES		3572		440
NO. IND. PER M ²		2.8562		2.8449
S-D INDEX - H ² (LN)		C.6723		0.8209
EVENNESS - J				

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
10/3/77

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
CNICARIA ACTINARIA (SEA ANEMONES) UNIDENTIFIED SP.	2	0.379	2	0.504
PLATYHELMINTHES TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	2	0.379	4	1.008
NEMERTINEA (RIBBON WORMS) UNIDENTIFIED SP.	17	3.220	13	3.275
NEMATODA (ROUNDWORMS) UNIDENTIFIED SP.	4	0.758	1	0.252
PHOFONIDA (PHORONIDS) PHORONIS ARCHITECTA	0	0.0	1	0.252
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTECINA CANDEI	0	0.0	1	0.252
NASSARIUS ACUTUS	0	0.0	8	2.015
NATICA PUSILLA	1	0.189	0	0.0
TURCNILLA CONRADII	0	0.0	1	0.252
PELECYPODA (CLAMS)				
CHIONE CANCELLATA	1	0.189	0	0.0
FRVILIA CONCENTRICA	17	3.220	2	0.504
LUCINA MULTILINEATA	6	1.136	16	4.030
PERIPLOMA MARGARITACEUM	2	0.379	6	1.511
TELLINA AEQUISTRIGATA	0	0.0	1	0.252
TELLINA TEXANA	8	1.515	0	0.0
TELLINA VERSICOLOR	39	7.386	32	8.060
TRACHECARDIUM MURICATUM	1	0.189	0	0.0
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	24	4.545	12	3.023
POLYCHAETA				
APCPARICNSPIO PYGMAEA	1	0.189	1	0.252
ARICIDEA FRAGILIS	0	0.0	1	0.252
ARICIDEA SUECICA	3	0.568	1	0.252
ARVANDIA AGILIS	1	0.189	0	0.0
ARMANDIA MACULATA	1	0.189	1	0.252
ERANIA WELLFLEETENSIS	3	0.568	0	0.0
CERATONEREIS IRRITABILIS	0	0.0	1	0.252
CHONE SP.	7	1.326	5	1.259
ETEONE LACTEA	2	0.379	9	2.267
GLYCERA AMERICANA	1	0.189	5	1.259
GLYCERA DIORANCHIAIA	0	0.0	12	3.023
GONIADA LITTOREA	11	2.083	5	1.259
GRUBEULEPIS MEXICANA	1	0.189	0	0.0
HAPLOSCOLOPLOS FOLIOSIS	6	1.136	3	0.756
LUMBRINERIS CRUZENSIS	207	39.205	107	26.952
LUMBRINERIS TETRALURA	6	1.136	27	6.801
MEDICASTUS CALIFORNIENSIS	0	0.0	1	0.252
MESOCETOPTERUS SAGITTARIUS	1	0.189	4	1.008
NEANTIES ACUMINATA	2	0.379	0	0.0
NEANTIES SUCCINEA	1	0.189	0	0.0
NEPHIYS PICTA	15	2.841	4	1.008
NOTOMASTUS HEMIPODUS	0	0.0	2	0.504
ONUPFIS EREMITA OCULATA	4	0.758	6	1.511

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 10/3/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
<u>PARANITES SPECIOSA</u>	1	0.189	0	0.0
<u>PARACNICES LYRA</u>	18	3.409	25	6.297
<u>PARACNIS FULGENS</u>	1	0.189	0	0.0
<u>PARAPRIONOSPIG PINNAIA</u>	1	0.189	0	0.0
<u>PHYLLODOCE ARENAE</u>	2	0.379	1	0.252
<u>PRIONOSPIG CRISTATA</u>	6	1.136	2	0.504
<u>RULLIERINEREIS MEXICANA</u>	11	2.083	5	1.259
<u>SCOLELPIOS TEXANA</u>	0	0.0	1	0.252
<u>SCOLELPIOS RUBRA</u>	0	0.0	2	0.504
<u>SIGAMBA BASSI</u>	2	0.379	0	0.0
<u>SPIO PETTIBONEAE</u>	4	0.758	1	0.252
<u>SPIOCEAETOPTERUS OCULATUS</u>	7	1.326	1	0.252
 <u>SIPUNCULICA</u> (PEANUT WORMS)				
UNIDENTIFIED SP.	2	0.379	1	0.252
 <u>ARTHROPODA</u> (CRUSTACEANS)				
<u>AMPHIPODA</u>				
<u>ACANTHOHAUSTORIUS</u> SP.	3	0.568	0	0.0
<u>AMPELISCA VERRILLI</u>	2	0.379	1	0.252
<u>GTANOPESIS</u> SP.	1	0.189	0	0.0
<u>LEPIDACTYLUS</u> SP.	14	2.652	1	0.252
<u>LISTERIELLA</u> SP.	2	0.379	2	0.504
<u>SELDOPLATYISCHNOPUS</u> SP.	16	3.030	19	4.786
<u>SYNTELIOILM</u> SP.	4	0.758	7	1.763
<u>ANOMURA</u>				
<u>ALBNEA PARETII</u>	0	0.0	1	0.252
<u>PAGURUS LONGICARPUS</u>	3	0.568	3	0.756
<u>BRACHYURA</u>				
<u>PINNIXIA SAYANA</u>	0	0.0	1	0.252
<u>PINNOTHERES OSTREUM</u>	3	0.568	0	0.0
<u>CARTIDEA</u>				
<u>PROCESSA FEMPILLI</u>	1	0.189	1	0.252
<u>CUMACEA</u>				
<u>CYCLAFSIS</u> SP.	4	0.758	7	1.763
<u>CYCLAFSIS VAFIANS</u>	2	0.379	2	0.504
<u>XYUFCSTYLIS SMITHI</u>	1	0.189	2	0.504
<u>SPILICUPA SALCMANI</u>	0	0.0	1	0.252
<u>MYSIIDACEA</u>				
<u>MYSIDOPSIS BIGELOONI</u>	2	0.379	2	0.504
<u>OSTRACODA</u>				
UNIDENTIFIED SP.	1	0.189	0	0.0
<u>PENAEIDEA</u>				
<u>LUCIFER FAXONI</u>	1	0.189	1	0.252
<u>TRACHYPENAEUS CONSTRICTUS</u>	1	0.189	2	0.504
 <u>ECHINODERMATA</u>				
<u>ECHINOIDEA</u> (SAND DOLLARS; URCHINS)				
<u>MOIRE ATROPS</u>	2	0.379	0	0.0
<u>OPHIURICIDEA</u> (BRITTLE STARS)				
<u>HEMIPHELIIS ELCANGAIA</u>	0	0.0	1	0.252
<u>HEMIPHELIIS GRACILLIMA</u>	7	1.326	5	1.259
<u>EPHICPHRAGMUS WURDEMANI</u>	1	0.189	0	0.0
UNIDENTIFIED SP.	2	0.379	1	0.252
 <u>CEPHALOCHORDATA</u> (LANCELETS)				
<u>BRANCHIOSTOMA FLORIOAE</u>	3	0.568	3	0.756

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
10/3/77
(CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL PERCENT	NO. OF IND. (E.) TOTAL PERCENT
TOTALS	528	397
NO. SPECIES	64	61
NO. IND. PER M ²	2112	1528
S-W INDEX - H'(LN)	2.8345	3.1138
EVENNESS - J	0.6815	0.7575

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
11/1/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA ACTINIARIA (SEA ANEMONES) UNIDENTIFIED SP.	0	0.0	1	0.328
PLATYHELMINTHES TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	2	0.275	1	0.328
NEMERTINEA (FIBBON WORMS) UNIDENTIFIED SP.	29	3.994	27	8.852
PHORONIDA (PHORONIDS) PHORONIS ARCHITESIA	1	0.138	0	0.0
MOLLUSCA (SHELLFISH) GASTROPODA (SNAILS)				
<i>NASSARILIS ACUTUS</i>	4	0.551	4	1.311
<i>DATICA FISILLA</i>	1	0.138	1	0.328
<i>OLIVA SAYANA</i>	0	0.0	1	0.328
<i>OLIVELLA MUTICA</i>	4	0.551	0	0.0
<i>TEREBEA DISLOCATA</i>	4	0.551	1	0.328
<i>TURBELLILLA CINNADI</i>	3	0.413	0	0.0
PELECYPODA (CLAMS)				
<i>CHIONE CANCELLATA</i>	0	0.0	2	0.656
<i>DIPLODONTIA SEMIASPERA</i>	1	0.138	0	0.0
<i>ERVILIA CONCENTRICA</i>	4	0.551	0	0.0
<i>LUCINA BULITIFLUMA</i>	10	1.377	5	1.639
<i>NUCULANA ACUTA</i>	0	0.0	1	0.328
<i>PERIPLOMA MARGARIACEUM</i>	10	1.377	0	0.0
<i>TELLIDORA CRISTATA</i>	1	0.138	0	0.0
<i>TELLINA IRIS</i>	0	0.0	3	0.984
<i>TELLINA TEXANA</i>	1	0.138	0	0.0
<i>TELLINA VERSICOLOR</i>	29	3.994	6	1.967
ANNELIDA (SEGMENTED WORMS)				
CLIGGCHAETA				
UNIDENTIFIED SP.	19	2.617	4	1.311
POLYCHAETA				
<i>ANTINCE SP.</i>	1	0.138	1	0.328
<i>ARTICIDEA FAUVELI</i>	0	0.0	1	0.328
<i>ARTICIDEA FRAGILIS</i>	3	0.413	6	1.967
<i>ARCTICIDEA PHILIPINAE</i>	1	0.138	0	0.0
<i>ARMANDIA MACULATA</i>	7	0.964	0	0.0
<i>CAILLERIELLA SP.</i>	1	0.138	0	0.0
<i>CHAEZOZONE SETOSA</i>	1	0.138	0	0.0
<i>CHLOEIA VIRIDIS</i>	1	0.138	0	0.0
<i>CHONE SP.</i>	10	1.377	1	0.328
<i>CYCLENIDES GOULDII</i>	1	0.138	0	0.0
<i>ETEONE LACTEA</i>	13	1.791	1	0.328
<i>EULAILA SANGUINEA</i>	0	0.0	1	0.328
<i>GLYCERA AMERICANA</i>	8	1.102	2	0.656
<i>GLYCERA DIBRANCHIATA</i>	2	0.275	25	8.197
<i>GONIADA LITICEA</i>	4	0.551	2	0.656
<i>GRUBBELELLIS MEXICANA</i>	1	0.138	0	0.0
<i>GYPTIS BREVIPALPA</i>	1	0.138	0	0.0
<i>HAPLOSCYLICUS FOLIOSUS</i>	2	0.275	0	0.0
<i>HARPIDIAE LUNULATA</i>	0	0.0	1	0.328
<i>LUMBRICELIS CRUZENSIS</i>	235	32.369	47	15.410
<i>LUMBRICELIS TETRAURA</i>	20	2.755	3	0.984
<i>PAEGILOCHIA FIDIA</i>	0	0.0	1	0.328

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
 11/1/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>MEDOMASTIS CALIFORNIENSIS</u>	1	0.138	2	0.656
<u>NEANTIDES SUCCINAE</u>	2	0.275	0	0.0
<u>NEPHIUS PICTA</u>	11	1.515	7	2.295
<u>NOTOMASTIS HEMIPODUS</u>	5	0.689	6	1.967
<u>ONUPHIS FREMITA OCULATA</u>	8	1.102	7	2.295
<u>PARANAIAS SPECIOSA</u>	0	0.0	1	0.328
<u>PARACNIDES LYRA</u>	37	5.096	75	24.590
<u>PARAONIS FULGENS</u>	5	0.689	0	0.0
<u>PARAFFICACISPIC PINNATA</u>	2	0.275	1	0.328
<u>PHERIS EHLEESI</u>	1	0.138	0	0.0
<u>PHYLLOCIDAE ARENAE</u>	1	0.138	0	0.0
<u>POLYKIDAE UNIDENTIFIED SP.</u>	1	0.138	1	0.328
<u>PRIONOSPID CRISTATA</u>	38	5.234	2	0.656
<u>RULLIFERINERIS MEXICANA</u>	23	3.168	4	1.311
<u>SCOLOPICS RUGRA</u>	1	0.138	0	0.0
<u>SYNTHETIBIONAE</u>	3	0.413	1	0.328
<u>THARIX ANNULOSUS</u>	1	0.138	0	0.0
 SIPUNCULIDA (PEANUT WORMS)				
<u>SGELENGIA IRICOCEPHALA</u>	2	0.275	0	0.0
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<u>AMPELISCA VERRILLI</u>	3	0.413	1	0.328
<u>FRICETHONIS SP.</u>	2	0.275	1	0.328
<u>PARAECHEUS SP.</u>	3	0.413	0	0.0
<u>PSEUDOPLATYLSCHNOPUS SP.</u>	22	3.030	26	8.525
<u>SYNCHELIDIUM SP.</u>	10	1.377	2	0.656
ANCRURA				
<u>ALBINEA PARETII</u>	3	0.413	1	0.328
<u>EUCERAMUS PRAEOLONGUS</u>	0	0.0	1	0.328
<u>SGURUS LONGICARPI</u>	7	0.964	0	0.0
BRACHYLRA				
<u>OVALIPES OCCELLATUS</u>	1	0.138	1	0.328
<u>PINNIXIA SAYANA</u>	0	0.0	1	0.328
CALLIASSIDAE				
<u>CALLIASSA JAMAICENSIS</u>	0	0.0	1	0.328
CUMACEA				
<u>CYCLAEFIS SP.</u>	10	1.377	1	0.328
<u>CYCLAPSIS VARIANS</u>	3	0.413	2	0.656
<u>OXYURECTYLIS SMITHI</u>	8	1.102	1	0.328
LEPTOSTRACA				
<u>NEBALIA SP.</u>	1	0.138	3	0.984
MYSIDACEA				
<u>BOWMANIELLA SP.</u>	1	0.138	0	0.0
<u>HYSTICOPSIS BIGELOWI</u>	1	0.138	0	0.0
OSTRACODA				
<u>UNIDENTIFIED SP.</u>	3	0.413	1	0.328
PEMPODEA				
<u>IBACYPENAEUS CONSTRICTUS</u>	1	0.138	0	0.0
TAKAIIDAEA				
<u>UNIDENTIFIED SP.</u>	1	0.138	0	0.0
 ECHINODERMATA				
ECHINOICEA (SAND DOLLARS; URCHINS)				
<u>EDIBA AIBROS</u>	2	0.275	0	0.0
<u>HELLITA CLINQUIESPERFICATA</u>	55	7.576	0	0.0
OPHTURIDAE (TORTLE STARS)				
<u>MICROCEPHOLIS GRACILLIMA</u>	3	0.413	2	0.984
<u>OPHICEPHALUS MURDEBANI</u>	0	0.0	1	0.328

CEPHALOCHORDATA (LANCELETS)

TREASURE ISLAND MOTEL (STATION 1) - CONTROL AND EXPERIMENTAL
1/1/77
(CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL PERCENT	NO. OF IND. (E.) TOTAL PERCENT
<u>FRANCIOSTOMA FLORIDAE</u>	9 1.240	2 0.656
TOTALS	726	305
NO. SPECIES	72	54
NO. IND. PER M ²	2904	1220
S-W INDEX - H°(LN)	3.0299	2.8764
EVENNESS - J	0.7085	0.7211

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL
7/11/77

SPECIES	NO. OF INDS. TOTAL	PERCENT	NO. OF INDS. TOTAL	PERCENT
CNIDARIA				
ACTINIARIA (SEA ANEMONES) UNIDENTIFIED SP.	1	0.048	5	0.330
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	2	0.095	5	0.330
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	51	2.425	52	3.435
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	9	0.428	0	0.0
BRACHIOPODA (LAMP SHELLS)				
GLIDIIDIA PYRAMIDATA	8	0.380	4	0.264
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTECCINA CANALICULATA	1	0.048	0	0.0
ACTECCINA CANDEI	39	1.854	1	0.066
BULLA STRIATA	1	0.048	0	0.0
CAECUM IMBRICATUM	2	0.095	0	0.0
CYLICINELLA BIDENIATA	2	0.095	6	0.396
DIASTICMA VARIUM	18	0.856	1	0.066
NATICA PUSILLA	6	0.285	0	0.0
OLIVA SAYANA	1	0.048	0	0.0
POLINICES DUPLICATUS	3	0.143	3	0.198
TEREBRA DISLOCATA	1	0.048	0	0.0
PELICYPODA (CLAMS)				
ERVILIA CONCENTRICA	52	2.473	0	0.0
LEPIKA SP.	0	0.0	3	0.198
LUCINA MULATILINÉATA	167	7.941	45	2.972
PERIPLEMMA MARGARITACEUM	8	0.380	1	0.066
PITAR SIMPSONI	4	0.190	0	0.0
SOLEN VIRIDIS	0	0.0	1	0.066
TELLINA AEGUISTRATA	1	0.048	1	0.066
TELLINA TAMPAENSIS	3	0.143	0	0.0
TELLINA TEXANA	20	0.951	9	0.594
TELLIDA VERSICOLOR	182	8.654	68	4.491
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	35	1.664	17	1.123
POLYCHAETA				
AGLAECHEMUS VERRILLI	1	0.048	0	0.0
ABDITICIDESIO PYGMAEA	7	0.333	12	0.793
ARICIDEA CEREBRI	1	0.048	0	0.0
ARICIDEA EFFAGILLIS	10	0.476	19	1.255
ARICIDEA PHILIPINAE	5	0.238	0	0.0
ARICIDEA SUECICA	0	0.0	11	0.727
ARIMADIA AGILIS	0	0.0	5	0.330
ARIMADIA MACULATA	0	0.0	1	0.066
CARAZZIELLA SP.	6	0.285	0	0.0
CAULLERIELLA SP.	1	0.048	0	0.0
CHONE SP.	53	2.520	15	0.991
CASTENIDES GOULDII	0	0.0	1	0.066
DISPIDIO UNGINATA	0	0.0	5	0.330
ETECNE LACTEA	10	0.476	0	0.0
GLYCERA AMERICANA	104	4.945	102	6.737

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL
 7/11/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>GLYCEFA DIBRANCHIATA</u>	0	0.0	2	0.132
<u>GNATIADA LITToralis</u>	18	0.856	15	0.991
<u>GRUBELEFFIS MEXICANA</u>	2	0.095	0	0.0
<u>GUTTIS VITTATA</u>	4	0.190	4	0.264
<u>HAPLISCCLOPLIS FOLIOSUS</u>	1	0.048	4	0.264
<u>HAPLISCCLOPLIS FRAGILIS</u>	3	0.143	3	0.198
<u>HAPLISCCLOPLIS ROBUSTUS</u>	0	0.0	2	0.132
<u>HARMITHIE LUNULATA</u>	1	0.048	0	0.0
<u>LUMBEFFIS CRUZENSIS</u>	391	18.592	249	16.446
<u>LUMBEFFIS TETRAURA</u>	22	1.046	6	0.396
<u>MAGELINA LONGICORNIS</u>	0	0.0	1	0.066
<u>MAGELINA SP.</u>	3	0.143	2	0.132
<u>MEDICASTUS CALIFORNIENSIS</u>	5	0.238	1	0.066
<u>MESOCRAEPTERUS SAGITTARIUS</u>	0	0.0	1	0.066
<u>MICRCPHM HALMUS SP.</u>	1	0.048	0	0.0
<u>NEANTIFES ACUMINATA</u>	3	0.143	2	0.132
<u>NEANTIFES SUCINEA</u>	0	0.0	2	0.132
<u>NEPHYTIS BUCERA</u>	4	0.190	4	0.264
<u>NEPHYTIS PICIA</u>	280	13.314	391	25.826
<u>NEREIS LAMELLOSA</u>	0	0.0	2	0.132
<u>NOTICMASTUS HEMIPODUS</u>	1	0.048	2	0.132
<u>ONUPPIIS EREMITA OCULATA</u>	54	2.568	37	2.444
<u>ONUPPIIS NEPOLIOSA</u>	5	0.238	0	0.0
<u>OWENTIA FUSIFORMIS</u>	5	0.238	4	0.264
<u>PARANAIFFES SPECIOSA</u>	1	0.048	0	0.0
<u>PARANIIDES LYRA</u>	53	2.520	148	9.775
<u>PARACNIS FULGENS</u>	6	0.285	0	0.0
<u>PARAPRIONOPODIO PINNAIA</u>	2	0.095	6	0.396
<u>PHYLLODOCE ARENAE</u>	3	0.143	2	0.132
<u>PODARKE OBSCURA</u>	1	0.048	0	0.0
<u>POECILCHAEFUS ICHNOCNI</u>	1	0.048	2	0.132
<u>PRICNISPIF CRISTATA</u>	27	1.284	12	0.793
<u>PSEUDEURYTHME AMBIGUA</u>	1	0.048	0	0.0
<u>RULLIERINERIS MEXICANA</u>	4	0.190	0	0.0
<u>SABELLA MICROPHTHALMA</u>	0	0.0	1	0.066
<u>SCCLELEPTIS GUAMATA</u>	4	0.190	0	0.0
<u>SCCLELEPTIS TEXANA</u>	0	0.0	1	0.066
<u>SCCLELEPTIS ARMIGER</u>	6	0.285	6	0.396
<u>SCCLELEPTIS FUERA</u>	2	0.095	0	0.0
<u>STYLICLON ARENICOLA</u>	2	0.095	0	0.0
<u>SIGAMERA BASSI</u>	2	0.095	0	0.0
<u>SPIO PETTIBONEAE</u>	0	0.0	1	0.066
<u>SPIOCLAEPTERUS OCULATUS</u>	0	0.0	1	0.066
<u>SPIDOPLANES DOMBYX</u>	18	0.856	27	1.783
 <u>SIPUNCULIDA (PEANUT WORMS)</u>				
<u>GOLFINGIA TRICHOCEPHALA</u>	1	0.048	0	0.0
 <u>ARTHROPODA (CRUSTACEANS)</u>				
<u>AMPHIPODA</u>				
<u>ACANTHOAUSTORIUS SP.</u>	2	0.095	0	0.0
<u>AMPELISCA ADITA</u>	11	0.523	2	0.132
<u>AMPELISCA VADORUM</u>	5	0.238	0	0.0
<u>AMPELISCA VERRILLI</u>	40	1.902	37	2.444
<u>ARGISA SP.</u>	1	0.048	2	0.132
<u>CAPRELLIDAE UNIDENTIFIED SP.</u>	3	0.143	2	0.132
<u>ERICHTHENIUS SP.</u>	2	0.095	0	0.0
<u>GAMMAPOEIS SP.</u>	1	0.048	0	0.0
<u>LISTRIELLA SP.</u>	12	0.571	3	0.198
<u>LYSTARESIS SP.</u>	1	0.048	1	0.066
<u>MONOCULIDES SP.</u>	2	0.095	1	0.066

TREASURE ISLAND MOTEL (STATION 1) - CONTROL & EXPERIMENTAL
 7/11/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
<u>PHCTIS SP.</u>	6	0.285	0	0.0
<u>PROTELAUSTORIUS SP.</u>	0	0.0	1	0.066
<u>PSEUDOPLATYTSCHINOPUS SP.</u>	26	1.236	15	0.991
<u>SYNCFELIDIUM SP.</u>	68	3.233	40	2.642
<u>ANOMURA</u>				
<u>ALBUNEA FARELLI</u>	0	0.0	1	0.066
<u>BRACHYURA</u>				
<u>PINNIXIA CYLINDRICA</u>	4	0.190	0	0.0
<u>PORTUNUS SP.</u>	0	0.0	12	0.793
<u>PORTUNIDAE UNIDENTIFIED SP.</u>	6	0.285	0	0.0
<u>CARICEA</u>				
<u>DYGRIDES ALPHAEOSTRIS</u>	0	0.0	6	0.396
<u>DYGRIDES LIMICOLA</u>	0	0.0	2	0.132
<u>PERCLIMENES LINGICAVICATUS</u>	0	0.0	1	0.066
<u>PROCESSA HEMPHILLI</u>	5	0.238	3	0.198
<u>CUPACEA</u>				
<u>CYCLAPSIS SP.</u>	19	0.903	4	0.264
<u>CYCLAPSIS VARIANS</u>	82	3.899	22	1.453
<u>OXYUROSTYLIS SMITHI</u>	24	1.141	5	0.330
<u>LEPTOSTRACA</u>				
<u>NEBALIA SP.</u>	1	0.048	1	0.066
<u>MYSTACEA</u>				
<u>UNIDENTIFIED SP.</u>	1	0.048	1	0.066
<u>OSTRACCCA</u>				
<u>UNIDENTIFIED SP.</u>	1	0.048	0	0.0
<u>PENIDEA</u>				
<u>TRACHYPOENAEUS CONSTRICTUS</u>	0	0.0	2	0.132
<u>STOMATOPODA</u>				
<u>ACANTHOPODILLA BIMINIENSIS</u>	1	0.048	0	0.0
<u>ECHINODERMATA</u>				
<u>HOLOTHUROIDEA (SEA CUCUMBERS)</u>				
<u>LEPTSYNAPTA SP.</u>	3	0.143	11	0.727
<u>OPHTHIURICAE (BRITTLE STARS)</u>				
<u>OPHICPHRAGMUS BURDEMANI</u>	1	0.048	0	0.0
<u>UNIDENTIFIED SP.</u>	6	0.285	3	0.198
<u>HEMICHOLODATA</u>				
<u>ENTEROPNEUSTA (ACORN WORMS)</u>				
<u>UNIDENTIFIED SP.</u>	1	0.048	0	0.0
<u>CEPHALOCHORDATA (LANCETTS)</u>				
<u>BRANCHIOSOMA FLORIDAE</u>	14	0.666	2	0.132
<u>VERTEBRATA</u>				
<u>PISCES (FISHES)</u>				
<u>HEPATICENCIUS NOVACULA</u>	2	0.095	0	0.0
<u>TOTALS</u>	2103		1514	
NO. SPECIES		99		81
NO. IND. PER M ²		3365		2422
S-W INDEX - H ⁰ (LN)		3.2301		2.8604
EVERNESS - J		0.7029		0.6577

SUN & SWIM MOTEL (STATION 2) - CONTROL & EXPERIMENTAL
7/15/77

SPECIES	NO. OF IND. (C)		NO. OF IND. (E)	
	TOTAL	PERCENT	TOTAL	PERCENT
Cnidaria				
ACTINIARIA (SEA ANEMONES)				
UNIDENTIFIED SP.	1	0.043	0	0.0
PLATYHELMINTHES				
TURBELLARIA (FLATWORMS)				
UNIDENTIFIED SP.	12	0.512	16	0.663
NEMERTINEA (RIBBON WORMS)				
UNIDENTIFIED SP.	57	2.432	45	1.864
NEMATODA (ROUNDWORMS)				
UNIDENTIFIED SP.	16	0.683	10	0.414
BRACHIOPODA (LAMP SHELLS)				
<u>GLOTTICIA PYRAMIDATA</u>	10	0.427	10	0.414
MOLLUSCA (SHELLFISH)				
GASTROPODA (SNAILS)				
ACTECCINA CANALICULATA	0	0.0	1	0.041
ACTECCINA CANDEI	19	0.811	32	1.326
ANACHIS FLORICANA	0	0.0	1	0.041
BULLA STRIATA	1	0.043	4	0.166
CYLICINELLA BIDENTATA	4	0.171	4	0.166
DIASTIMA VARIUM	21	0.896	16	0.663
NATICA PUSILLA	10	0.427	21	0.870
OLIVELLA BULLULA	1	0.043	1	0.041
OLIVELLA MINUTA	0	0.0	3	0.124
OLIVELLA MUTICA	3	0.128	0	0.0
POLINICES DUPLICATUS	1	0.043	2	0.083
TEREEHA DISLOCATA	2	0.085	0	0.0
TURBELLILLA ELEGANTULA	1	0.043	1	0.041
PELECYPODA (CLAMS)				
ANATINA ARATINA	3	0.128	2	0.083
ERYVILLA CIRCENTRICA	41	1.749	44	1.823
LAEVIGAEDUM LAEVIGAIMUM	5	0.213	16	0.663
LEPTICA SP.	2	0.085	0	0.0
LUCINA MULITIFLINA	191	8.148	19	0.787
MACECCALLISTA NIVOSA	0	0.0	1	0.041
MUSCULUS LATERALIS	1	0.043	0	0.0
PERIELCMA MARGARITACEUM	5	0.213	18	0.746
PTYAS SIMPSONI	0	0.0	1	0.041
TELLINA AEQUISTRIGATA	6	0.256	4	0.166
TELLINA TEXANA	19	0.811	9	0.373
TELLINA VERSICOLOR	262	11.177	196	8.119
TRACHECARDIUM MURICATUM	3	0.128	9	0.373
VARICORNUA OPERCULATA	5	0.213	0	0.0
VENERICAE UNIDENTIFIED SP.	53	2.261	45	1.864
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	46	1.962	55	2.278
POLYCHAETA				
APOPENICNOPILO PYGMAEA	2	0.085	6	0.249
ARICICREA FRAGILIS	9	0.384	2	0.083
ARICICREA PHILBINAE	7	0.299	0	0.0
ARICICREA SUECICA	0	0.0	1	0.041
BRACICREA SP.	0	0.0	2	0.083
ARMANITA AGILIS	10	0.427	13	0.539
ARMANITA MACULATA	13	0.555	21	0.870

SUN & SWIM MOTEL (STATION 2) - CONTROL & EXPERIMENTAL
 7/15/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<i>BRAUNIA WELLFLEETENSIS</i>	1	0.043	0	0.0
<i>CAPITELLA CAPITATA</i>	0	0.0	3	0.124
<i>CERATITIS IRITABILIS</i>	0	0.0	1	0.041
<i>CHOCNE SP.</i>	28	1.195	30	1.243
<i>CYRECHUS LYRIFORMIS</i>	9	0.384	15	0.621
<i>CISTERNAE SCULPTA</i>	2	0.085	1	0.041
<i>DISPICUNCINATA</i>	0	0.0	2	0.083
<i>ETECHE LACTEA</i>	10	0.427	6	0.249
<i>EULALIA SANGUINEA</i>	1	0.043	0	0.0
<i>GLYCERA AMERICANA</i>	87	3.712	92	3.811
<i>GCNIACA LITIOSEA</i>	18	0.768	13	0.539
<i>GRUBEULEPIS MEXICANA</i>	3	0.128	1	0.041
<i>GYPTIS VITTATA</i>	7	0.299	3	0.124
<i>HAPLOSCILLOS FOLIOSUS</i>	2	0.085	2	0.083
<i>HAPLOSCOLOPLOS FRAGILIS</i>	1	0.043	2	0.083
<i>HARMIOTHE LUNULATA</i>	1	0.043	0	0.0
<i>LUMBRINERIS CRUZENSIS</i>	397	16.937	437	18.103
<i>LUMBRINERIS TETRAURA</i>	16	0.683	13	0.539
<i>MAGELINA SP.</i>	2	0.085	5	0.207
<i>MEDICASTUS CALIFONIENSIS</i>	0	0.0	1	0.041
<i>MICROMYTHALMUS SCZELKOWII</i>	1	0.043	0	0.0
<i>MICROMYTHALMUS SP.</i>	3	0.128	0	0.0
<i>MEANTHES ACUMINATA</i>	1	0.043	1	0.041
<i>NEPHIYS BUCERA</i>	5	0.213	3	0.124
<i>NEPHYYS PICTA</i>	206	8.788	122	5.054
<i>NEREYS LARELLCSA</i>	2	0.085	0	0.0
<i>NOTICESTUS HEMIPODUS</i>	0	0.0	1	0.041
<i>NOTICESTUS LATERICEUS</i>	1	0.043	0	0.0
<i>CNUPHIS EREMITA OCULATA</i>	34	1.451	51	2.113
<i>OPHELIA SP.</i>	1	0.043	0	0.0
<i>OVENIA FUSIFORMIS</i>	21	0.896	9	0.373
<i>PARACNICES LYRA</i>	83	3.541	42	1.740
<i>PARACNICES FUGENS</i>	6	0.256	3	0.124
<i>PARAPONTOSPIO PINNATA</i>	0	0.0	1	0.041
<i>PHYLLODOCE ARENAE</i>	1	0.043	11	0.456
<i>PRIONOSPIO CRISTATA</i>	44	1.877	46	1.906
<i>BULLERINERES MEXICANA</i>	5	0.213	7	0.290
<i>SABELLA MICROPHTHALMA</i>	5	0.213	0	0.0
<i>SCOLELEPIS TEXANA</i>	0	0.0	2	0.083
<i>SCOLELEPIS ARMIGER</i>	0	0.0	14	0.580
<i>SCOLOPLOS RUORA</i>	10	0.427	1	0.041
<i>SIGAPERA DASSI</i>	100	0.043	1	0.041
<i>SPHAEROSYLLIS SP.</i>	0	0.0	1	0.041
<i>SPIO PETTIBONEAE</i>	1	0.043	1	0.041
<i>SPLOPHANES BOMBYX</i>	9	0.384	6	0.249
<i>STREPTOSYLLIS ARENAE</i>	0	0.0	1	0.041
<i>WEBSTERINERES TRIDENTATA</i>	0	0.0	1	0.041
 SIPUNCULIDA (PEANUT WORMS)				
<i>GOLFIA TRICHOSEPHALA</i>	1	0.043	0	0.0
 ARTHROPODA (CRUSTACEANS)				
<i>AMPHIFCA</i>				
<i>ACANTHOHAUSTORIUS SP.</i>	7	0.299	12	0.497
<i>AMPELISCA ABDITA</i>	2	0.085	4	0.166
<i>AMPELISCA VALLERUM</i>	4	0.171	4	0.166
<i>AMPELISCA VERRILLI</i>	32	1.365	56	2.320
<i>ARGISCA SP.</i>	4	0.171	6	0.249
<i>CAPRELLIDAE UNIDENTIFIED SP.</i>	4	0.171	2	0.083
<i>CARINOBATEA SP.</i>	1	0.043	0	0.0
<i>ERICHEMONILIS SP.</i>	2	0.085	1	0.041

SLN & SWIM MOTEL (STATION 2) - CONTROL & EXPERIMENTAL
 7/15/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)	NO. OF IND. (E.)	TOTAL	PERCENT	TOTAL	PERCENT
HIPPOMEDON SP.	1	0.043	1	0.041		
LYSTRELLA SP.	9	0.384	11	0.456		
LYSTANDOPSIS SP.	1	0.043	6	0.249		
MELITIA APPENDICULATA	4	0.171	1	0.041		
MICRODEUTOPUS SP.	1	0.043	2	0.083		
MONOCLEODES SP.	3	0.128	7	0.290		
PHOTIS SP.	1	0.043	1	0.041		
PRCYCHAUSTORIUS SP.	3	0.128	9	0.373		
PSEUDCHAUSTORIUS SP.	38	1.621	36	1.491		
PSEUDOPLATYPSCHNIPUS SP.	57	2.432	72	2.983		
SYNCHELIDIUM SP.	69	2.944	81	3.355		
UNIDENTIFIED SP.	4	0.171	1	0.041		
ANOMURA						
ALBUREA FAEZII	3	0.128	2	0.083		
PAGUEUS LONGICARPUS	1	0.043	1	0.041		
BRACHYURA						
PINNIXIA SAYANA	1	0.043	6	0.249		
FINNITHERES OSTREUM	6	0.256	0	0.0		
PORTUNUS SP.	16	0.683	17	0.704		
CARIDEA						
LATREUTES PARVULLUS	6	0.0	1	0.041		
OGYRIDES LIMICOLA	3	0.128	7	0.290		
PROCESSA HEMPHILLI	10	0.427	20	0.829		
CUMACEA						
CYCLAPYSIS SP.	45	1.920	83	3.438		
CYCLAPYSIS VARIANS	59	2.517	229	6.486		
CYXYUOSTYLIS SMITHI	39	1.664	59	2.444		
UNIDENTIFIED SP.	1	0.043	1	0.041		
LEPTOSTRACA						
NERALIA SP.	10	0.427	50	2.071		
MYSTACACEA						
MYSIDOPSIS BIGELOWI	1	0.043	0	0.0		
UNIDENTIFIED SP.	5	0.213	8	0.331		
OSTRACCA						
UNIDENTIFIED SP.	1	0.043	6	0.249		
PENAEIDEA						
SICYCNIA BREVIROSTRIS	0	0.0	2	0.083		
TRACHYPENAEUS CONSTRICTUS	2	0.085	1	0.041		
STOMATOPODA						
ACANTHOSQUILLA BIMINIENSIS	2	0.085	0	0.0		
CORONIS EXCAVATRIX	0	0.0	1	0.041		
ECHINODERDATA						
ASTEROIDEA (STARFISHES)						
LUIDIA ALTERNATA	1	0.043	0	0.0		
HOLOTUROIDAEA (SEA CUCUMBERS)						
LEPTOCYANIA SP.	1	0.043	2	0.083		
OPHIURIDEA (BRITTLE STARS)						
UNIDENTIFIED SP.	10	0.427	4	0.166		
HEMICHORDATA						
ENTEROPNEUSTA (ACORN WORMS)	0	0.0	1	0.041		
UNIDENTIFIED SP.						
CEPHALOCHORDATA (LANCETLETS)						
ABASCUS FLORIDA	12	0.512	15	0.621		
VERTEBRATA						
PISCES (FISHES)						
HEMIPTERONIUS NOVACULA	0	0.0	1	0.041		
LEPOPHIDIUM GRAELLI	0	0.0	1	0.041		

SLN & SWIM MOTEL (STATION 2) - CONTROL & EXPERIMENTAL
7/15/77
(CONTINUED)

SPECIES	NO. OF IND. (S)	NO. OF IND. (E)
	TOTAL PERCENT	TOTAL PERCENT
TOTALS	2344	2414
NO. SPECIES	112	114
NO. IND. PER M ²	3750	3662
S-W INDEX - H' (LN)	3.4273	3.5029
EVENNESS - J	0.7264	0.7396

HILTON HOLIDAY INN (STATION 3) - CONTROL & EXPERIMENTAL
7/25/77

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
CNICARIA ACTINIARIA (SEA ANEMONES) UNIDENTIFIED SP.	0	0.0	5	0.198
PLATYHELMINTHES TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	5	0.333	37	1.467
NEUROPODA (RIBBON WORMS) UNIDENTIFIED SP.	49	1.812	57	2.259
NEMATODA (ROUNDWORMS) UNIDENTIFIED SP.	18	0.666	28	1.110
PHORONIDA (PHORONIDS) PHORONIS ARCHITECTA	1	0.037	3	0.119
BRACHIOPODA (LAMP SHELLS) GLOTTIDIA PYRAMIDATA	0	0.0	4	0.159
MOLLUSCA (SHELLFISH) GASTROPODA (SNAILS)				
ACTECCINA CANALICULATA	0	0.0	1	0.040
ACTECCINA CANDEI	27	0.999	10	0.396
ANACASSIS FLORICANA	1	0.037	1	0.040
BULLA STRIATA	2	0.074	0	0.0
CAECUM IMBRICATUM	1	0.037	0	0.0
CAECUM PULCHELLUM	3	0.111	0	0.0
CYLICINELLA BIDENIATA	11	0.407	0	0.0
DIASTIMA VARIUM	83	3.070	23	0.912
EXANELLA JAMAICENSIS	0	0.0	1	0.040
NATICA PUSILLA	46	1.701	30	1.189
OLIVA SAVANA	1	0.037	0	0.0
OLIVELLA MINUTA	5	0.185	4	0.159
OLIVELLA MUTICA	7	0.259	7	0.277
PHILINE SAGRA	0	0.0	4	0.159
POLINICES DUPLICATUS	1	0.037	1	0.040
TURBONILLA CONRADII	6	0.222	11	0.436
PELECYPODA (CLAMS)				
ANATINA ANATINA	4	0.148	4	0.159
ERVILLA CONCENTRICA	27	0.999	18	0.713
LAEVITARDIUM LAEVIGATUM	1	0.037	0	0.0
LEPTA SP.	10	0.370	4	0.159
LUCINA MULITLINEATA	53	1.960	69	2.735
LYONIA H. FLORICANA	0	0.0	1	0.040
MACOMA CONSTRICTA	2	0.074	0	0.0
PANDCEA TRILINIFATA	0	0.0	1	0.040
PERIPLOMA MARGARITACEUM	2	0.074	2	0.079
PITAE SIMPSONI	47	1.738	29	1.149
STRIGILLA MIRABILIS	4	0.148	8	0.317
TELLINA AEQUISTRIGATA	2	0.074	18	0.713
TELLINA TEXANA	363	13.425	349	13.833
TELLINA VERSICOLOR	203	7.507	166	6.579
TRACHYCARDIUM MURICATUM	3	0.111	2	0.079
VENEFICAE UNIDENTIFIED SP.	12	0.444	37	1.467
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA	39	1.442	8	0.317
UNIDENTIFIED SP.				
POLYCHAETA				

HILTON HOLIDAY INN (STATION 3) - CONTROL & EXPERIMENTAL
 7/25/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
AMERICICNUPHIS MAGNA	2	0.074	0	0.0
APOCYCNICNSPIG PYGMAEA	1	0.037	2	0.079
ARICIDEA FFAGILIS	9	0.333	37	1.467
ARICIDEA PHILEPINA	0	0.0	1	0.040
ARICIDEA SUECICA	2	0.074	2	0.079
ARMANDIA AGILIS	6	0.222	3	0.119
ARMANCIA MACULATA	35	1.294	23	0.912
BRANIA CLAVATA	1	0.037	1	0.040
BRANIA WELLFLEIENSIS	6	0.222	6	0.238
CHONE SP.	33	1.220	19	0.753
CIRRIPHORUS LYRIFORMIS	0	0.0	15	0.595
CISTENICES GOULDII	1	0.037	1	0.040
DIOPATRA CUPREA	0	0.0	4	0.159
DISPIC UNCI NATA	0	0.0	5	0.198
ELEGNE LACTEA	6	0.222	12	0.476
GLYCERA AMERICANA	20	0.740	19	0.753
GONIACA LITOREA	6	0.222	0	0.0
GRUBELLEPTIS MEXICANA	2	0.074	11	0.436
GYPTIS VITIATA	1	0.037	0	0.0
LAONEREIS CULVERI	0	0.0	5	0.198
LOIMIA MEDUSA	3	0.111	0	0.0
LUMBEINERIS CRUZENSIS	653	24.149	500	19.818
LUMBEINERIS TETRAURA	2	0.074	0	0.0
LYSICICE NINETIA	1	0.037	0	0.0
MAGELCNA SP.	17	0.629	20	0.793
MEDICMASTUS CALIFORNIENSIS	1	0.037	0	0.0
MESOCRAEOTOPTERUS SAGITTARIUS	10	0.370	13	0.515
NEANTHES ACUMINATA	1	0.037	2	0.079
NEPHIYS BUCERA	6	0.333	12	0.476
NEPHIYS PICTA	81	2.996	71	2.814
NEREIS LAMELLCSA	1	0.037	0	0.0
NOTOMASTUS HEMIPODUS	2	0.074	3	0.119
NOTOMASTUS LATERICEUS	1	0.037	0	0.0
ONUPHIS FREMITA OCULATA	8	0.296	21	0.832
PARACNIDES LYRA	46	1.701	6	0.238
PARALNIS FULGENS	10	0.370	3	0.119
PARAFRICNSPID PINNATA	1	0.037	0	0.0
PARAFRICNSSYLLIS LONGICIRRAIA	0	0.0	4	0.159
PHYLLODCE ARENAE	1	0.037	6	0.238
PTECTILCHAETUS JOHNSONI	0	0.0	1	0.040
PRICKNSPIC CRISTATA	56	2.071	55	2.180
RULLIEFETIS MEXICANA	4	0.148	1	0.040
SABELLA MICROPHTHALMA	1	0.037	0	0.0
SCOLELEFIS TEXANA	3	0.111	3	0.119
SCOLELEFIS ARMIGER	2	0.074	1	0.040
SCOLELEFIS FUERA	1	0.037	1	0.040
SIGAMERA BASSI	11	0.407	13	0.515
SP10 PETTISONAE	2	0.074	2	0.079
SP10CAEOTOPTERUS OCULATUS	1	0.037	1	0.040
SP10OPANES DUMBYX	1	0.037	2	0.079
STREPTOSYLLIS ARENAE	0	0.0	1	0.040
 ARTHROPOCA (CRUSTACEANS)				
AMPHIPODA				
ACANIMORPHASTORIUS SP.	1	0.037	0	0.0
AMPELTSCA ABDITA	4	0.148	3	0.119
AMPELTSCA VERRILLI	16	0.592	13	0.515
ARGISSA SP.	3	0.111	7	0.277
ELASMCIPUS SP.	1	0.037	0	0.0
LISTRIELLA SP.	9	0.333	7	0.277
MELITA APPENDICULATA	1	0.111	0	0.0

HILTON HOLIDAY INN (STATION 3) - CONTROL & EXPERIMENTAL
 7/25/77
 (CONTINUED)

SPECIES	NO. OF IND. (C ₂)		NO. OF IND. (E ₂)	
	TOTAL	PERCENT	TOTAL	PERCENT
<u>MICRODEUTOPUS</u> SP.	10	0.370	4	0.159
<u>MONOCULODES</u> SP.	22	0.814	30	1.189
<u>PROTOAUSTORIUS</u> SP.	146	5.399	242	8.592
<u>PSEUDOFALSTORIUS</u> SP.	9	0.333	4	0.159
<u>PSEUDOPLATYPSCHNOPIUS</u> SP.	118	4.364	115	4.558
<u>SYNCHIDIUM</u> SP.	26	0.962	41	1.625
ANOMURA				
<u>ALBUNEA PARETII</u>	3	0.111	5	0.198
<u>PAGURUS LONGICARPUS</u>	3	0.111	1	0.040
BRACHYURA				
<u>HEPATUS EPHELITICUS</u>	0	0.0	1	0.040
<u>ovalipes ocellatus</u>	0	0.0	1	0.040
<u>PINNIXIA SAYANA</u>	12	0.444	0	0.0
<u>FINNITHERES OSTREUM</u>	1	0.037	0	0.0
<u>PORTUNUS</u> SP.	9	0.333	2	0.079
CARIDEA				
<u>LATRELLITES PARVULUS</u>	1	0.037	0	0.0
<u>PROCESSA HEMPHILLI</u>	7	0.259	2	0.079
CLIMACEA				
<u>CYCLAPSIS</u> SP.	22	0.814	56	2.338
<u>CYCLAPETIS VARIANS</u>	55	2.034	61	2.418
<u>OXYUROSYLIS SMITHI</u>	6	0.222	13	0.515
ISOPODA				
<u>EDOTEA MONTOSA</u>	1	0.037	0	0.0
LEPTOSTRACA				
<u>NEBALIA</u> SP.	13	0.481	11	0.436
MYSIACEA				
UNIDENTIFIED SP.	10	0.370	4	0.159
OSTRACODA				
UNIDENTIFIED SP.	14	0.518	17	0.674
PEMIDEA				
<u>IRACHYPENAEUS CONSTRICTUS</u>	0	0.0	1	0.040
ECHINODERMATA				
OPHIURICIDEA (BRITTLE STARS)				
UNIDENTIFIED SP.	5	0.185	8	0.317
CEPHALOCHORDATA (LANCELETS)				
<u>BRANCHICISTOMA FLORIDA</u>	69	2.552	19	0.753
VERTEBRATA				
PISCES (FISHES)				
<u>HEMIPTERONOTUS NOVACULA</u>	1	0.037	1	0.040
TOTALS	2704		2523	
NO. SPECIES		105		98
NO. IND. PER M ²		4326		4037
S-W INDEX - H' (LN)		3.1958		3.2651
EVENNESS - J		0.6867		0.7121

SANDPIPER MOTEL (STATION 4) - CONTROL & EXPERIMENTAL
7/26/77

SPECIES	NO. OF IND. TOTAL	PERCENT	NO. OF IND. TOTAL	PERCENT
CNICARIA ACTINIARIA (SEA ANEMONES) UNIDENTIFIED SP.	2	0.079	1	0.062
PLATYHELMINTHES TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	11	0.435	1	0.062
NEMERTINEA (RIBBON WORMS) UNIDENTIFIED SP.	36	1.422	34	2.103
NEMATODA (ROUNDWORMS) UNIDENTIFIED SP.	0	0.0	1	0.062
PHORONIDA (PHORONIDS) PHORONIS ARCHIECTIA	0	0.0	1	0.062
BRACHIOPODA (LAMP SHELLS) GLCIDIA PYRAMICATA	1	0.040	8	0.495
MOLLUSCA (SHELLFISH) GASTROPODA (SNAILS)				
ACTEOCINA CANDEI	0	0.0	1	0.062
CYLICHNELLA BIDENTATA	51	2.015	23	1.422
NATICA PUSILLA	36	1.422	10	0.618
OLIVELLA MINUTA	7	0.277	2	0.124
OLIVELLA MUTICA	7	0.277	3	0.186
PHILINE SAGRA	1	0.040	1	0.062
TURBONILLA CONRADI	5	0.198	1	0.062
TURBONILLA SP.	3	0.119	1	0.062
PELECYPODA (CLAMS)				
ERYLIA CONCENTRICA	15	0.593	1	0.062
LEPTIN SP.	29	1.146	1	0.062
LUCINA MULTILINEATA	13	0.514	157	5.709
PERIPLCHA MARGARITACEUM	0	0.0	1	0.062
PITAR SIMPSONI	114	4.504	16	1.113
STRIGILLA MIRABILIS	14	0.553	5	0.309
TELLINA AEQUISTRIGATA	0	0.0	4	0.247
TELLINA IRIS	0	0.0	11	0.680
TELLINA TEXANA	443	17.503	89	5.504
TELLINA VERSICOLOR	102	4.030	120	7.421
TRACHYCARDIUM MURICATUM	4	0.158	4	0.247
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	5	0.198	1	0.062
POLYCHAETA				
ANOCES MAYAQUEZENSIS	0	0.0	16	0.989
APOPLECTONOSPIS PYGMAEA	0	0.0	2	0.124
ARICICEA FRAGILIS	0	0.0	1	0.062
ARMANDIA AGILIS	28	1.106	57	3.525
ARMANDIA MACULATA	19	0.751	17	1.051
ERANIA WELLFLEETENSIS	13	0.514	13	0.804
CAPITELLA CAPITATA	2	0.079	33	2.041
CERATCGNEREIS IRRITABILIS	0	0.0	1	0.062
CHONE SP.	3	0.119	2	0.124
DISPICUNCINATA	0	0.0	1	0.062
ETEONE ALBA	1	0.040	0	0.0
ETEONE LACTEA	9	0.356	1	0.062
GLYCERA AMERICANA	28	1.106	65	4.020

SANDPIPER MOTEL (STATION 4) - CONTROL & EXPERIMENTAL
 7/26/77
 (CONTINUED)

SPECIES	NO. OF IND. (C ₂) TOTAL	PERCENT	NO. OF IND. (E ₂) TOTAL	PERCENT
GONIACA LITTOREA	0	0.0	2	0.124
GRUERULEPIS MEXICANA	0	0.0	4	0.247
GYPSIS VITTATA	0	0.0	10	0.618
HAPLOSCOLOPLOS FOLIOSUS	0	0.0	7	0.433
HAPLOSCOLOPLOS FRAGILIS	2	0.079	2	0.124
HAPLOSCOLOPLOS ROBUSTUS	0	0.0	4	0.247
HEMIPODUS ROSEUS	1	0.040	0	0.0
LOIMIA MEDUSA	0	0.0	4	0.247
LUMBRINERIS CRUZENSIS	521	20.585	129	7.978
MAGELLNA SP.	10	0.395	4	0.247
MESOCERAFTOPTERUS SAGITTARIUS	13	0.514	30	1.855
NEANTIES ACUMINATA	0	0.0	3	0.186
NEPHYTIS BUCERA	26	1.027	12	0.742
NEPHYTIS PICTA	2	0.079	143	8.844
NOTOMASTUS HEMIPODUS	0	0.0	1	0.062
ONUPFIS EREMITA OCULATA	22	0.869	10	0.618
OPHELIA SP.	0	0.0	2	0.124
ORBINIA RISERI	2	0.079	2	0.186
PARANAITES SPECIOSA	1	0.040	21	1.299
PARACNIS FULGENS	61	2.410	4	0.247
PARAPRIONOSPIA PINNATA	0	0.0	1	0.062
PHYLLODOCE ARENAE	4	0.158	5	0.309
PHYLLOORNATUS	1	0.040	0	0.0
POLYDORA SOCIALIS	1	0.040	0	0.0
POLYDORA TETRABRANCHIA	2	0.079	0	0.0
PRIONOSPIA CRISTATA	18	0.711	7	0.433
RULLIERINERIS MEXICANA	0	0.0	2	0.495
SCOLICLIPS ARMIGER	8	0.316	10	0.618
SIGALION ARENICOLA	0	0.0	3	0.186
SIGAMBRA BASSI	0	0.0	33	2.041
SPIO PETTIBONEAE	6	0.237	21	1.299
SPIOPLANES BOMBYX	6	0.237	9	0.557
STREPISYLLIS ARENAE	1	0.040	0	0.0
SIPUNCULICA (PEANUT WORMS) UNIDENTIFIED SP.	5	0.198	3	0.186
ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
AMPELISCA ABDITA	2	0.079	6	0.371
AMPELISCA VERRILLI	8	0.316	1	0.062
ARGITEA SP.	2	0.079	0	0.0
LISTERELLA SP.	2	0.079	1	0.062
MONOCILLODES SP.	10	0.395	1	0.062
PROTOHAUSTORIUS SP.	385	15.211	38	2.350
PSEUDOHAUSTORIUS SP.	15	0.593	25	1.546
PSEUDOCOPLAIYISCHNOPODUS SP.	141	5.571	38	2.350
SYNCELLOIDIUM SP.	52	2.055	5	0.309
ANOMURA				
ALBUNEA PARELLI	1	0.040	5	0.309
PAGURUS LONGICARPUS	3	0.119	5	0.309
BRACHYLIRIA				
PINNIXIA CRISTATA	1	0.040	0	0.0
PINNIXIA LEPTOSYNAPIAE	0	0.0	3	0.186
PINNIXIA PEARSET	0	0.0	1	0.062
PINNIFERES OSIREUM	0	0.0	3	0.186
PORTUNUS SP.	4	0.158	1	0.062
CALLIANASSIDAE				
CALLIANASSA JAMAICENSIS	0	0.0	1	0.062
CARICEA				
HIPPOLYTE PLEURACANTHIA	1	0.040	0	0.0

SANDPIPER MOTEL (STATION 4) - CONTROL & EXPERIMENTAL

7/26/77
(CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
<u>DICRIDEA LIMICOLA</u>	1	0.040	0	0.0
<u>PROCTOSA HEMPHILLI</u>	8	0.316	4	0.247
<u>CUNACEA</u>				
<u>CYCLAPSIS SP.</u>	14	0.553	4	0.247
<u>CYCLAPSIS VARIANS</u>	101	3.991	17	1.051
<u>OXYUROSTYLIS SMITHI</u>	4	0.158	2	0.124
<u>LEPTOSTRACA</u>				
<u>NEODIA SP.</u>	5	0.198	9	0.557
<u>OSTRACCA</u>				
<u>UNIDENTIFIED SP.</u>	28	1.106	7	0.433
<u>PENAEIDEA</u>				
<u>PENAEUS DUORARUM</u>	1	0.040	0	0.0
<u>STICNATOPODA</u>				
<u>ACANIMOSQUILLA BIMINIENSIS</u>	0	0.0	1	0.062
<u>ECHINODERDATA</u>				
<u>ASTEROIDEA (STARFISHES)</u>				
<u>LUDIA ALTERNATA</u>	0	0.0	1	0.062
<u>ECHINOIDEA (SAND DOLLARS; URCHINS)</u>				
<u>SELLIJA QUINQUEPERFECTA</u>	6	0.237	3	0.186
<u>OPHTUROIDEA (BRITTLE STARS)</u>				
<u>UNIDENTIFIED SP.</u>	5	0.198	39	2.412
<u>HEMICHORDATA</u>				
<u>ENTEROCREUSTA (ACORN WORMS)</u>				
<u>UNIDENTIFIED SP.</u>	0	0.0	1	0.062
<u>CEPHALOCHORDATA (LANCELETS)</u>				
<u>BRANCHICISTIGMA ELONGATA</u>	16	0.632	191	11.812
TOTALS	2531		1617	
NO. SPECIES	74			94
NO. IND. PER M ²	4050			2587
S-W INDEX - H'(LN)	2.8718			3.4385
EVENNESS - J	0.6672			0.7568

PEPPERTREE CONDOMINIUM (STATION 5) - CONTROL & EXPERIMENTAL
7/27/77

SPECIES	NO. OF IND. (C)	NO. OF IND. (E)	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA ACTINIARIA (SEA ANEMONES) UNIDENTIFIED SP.	3	0.341	0	0.0		
PLATYHELMINTHES TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	0	0.0	3	0.180		
NEVERTINEA (RIBBON WORMS) UNIDENTIFIED SP.	29	3.295	45	2.703		
PHORONIDA (PHORONIDS) PHORONIS ARCHITECTA	0	0.0	1	0.060		
BRACHIOPODA (LAMP SHELLS) GLOIOLIDIA PYRAMICAIA	0	0.0	1	0.060		
MOLLUSCA (SHELLFISH) GASTROPODA (SNAILS)						
ACTEOCINA CANDEI	1	0.114	0	0.0		
ANACHIS FLORITANA	0	0.0	1	0.060		
CYLICHNELLA BICENTARIA	3	0.341	20	1.201		
NATICA FUSILLA	5	0.568	29	1.742		
OLIVELLA MINUTA	0	0.0	2	0.120		
OLIVELLA MUTICA	2	0.227	2	0.120		
POLYNICES DUPLICATUS	3	0.341	1	0.060		
TEREBRA DISLOCATA	1	0.114	2	0.120		
TURBELLIA SP.	2	0.227	11	0.661		
PELECYPODA (CLAMS)						
CUNA DALLI	0	0.0	1	0.060		
ENVILLA CONGENITICA	2	0.227	5	0.300		
LEPTA SP.	7	0.795	9	0.541		
LUCINA MULTILINEATA	8	0.909	3	0.180		
PITAE SIMPSONI	17	1.932	11	0.661		
STRIGILLA MIRABILIS	5	0.568	6	0.360		
TELLINA IRIS	0	0.0	1	0.060		
TELLINA TEXANA	40	4.545	255	15.315		
TELLINA VERSICOLOR	94	10.682	90	5.405		
TRACHYCARDIUM MURICATUM	0	0.0	1	0.060		
ANNELIDA (SEGMENTED WORMS)						
POLYCHAETA						
ARMADIA AGILIS	1	0.114	55	5.706		
ARMADIA MACULATA	2	0.227	3	0.180		
BRANTA CLAVATA	0	0.0	1	0.060		
CAPITELLA CAPITATA	0	0.0	1	0.060		
CHONE SP.	0	0.0	1	0.060		
DISPIDUNCINAIAS	2	0.227	1	0.060		
ETEONE LACTEA	0	0.0	1	0.060		
GLYCERA AMERICANA	6	0.682	20	1.201		
SEBIDIUEPIS MEXICANA	0	0.0	1	0.060		
GYPTIS VITTATA	0	0.0	1	0.060		
HAPLOCYCLOPS FOLIOSUS	0	0.0	1	0.060		
LOAESTA MEDUSA	0	0.0	1	0.060		
LUMBRICERIS CRUZENSIS	62	7.045	286	17.177		
MAGELLANA PETITONNEAE	1	0.114	0	0.0		
MAGELLANA RIOJAI	29	3.295	13	0.761		
MAGELLANA SP.	1	0.114	1	0.060		
MESSOCEAEPPTERUS SAGITTARIUS	13	1.477	10	0.601		
NEANTICUS ACUMINATA	9	1.023	3	0.180		

PEPPERTREE CONDOMINIUM (STATION 5) - CONTROL & EXPERIMENTAL
 7/27/77
 (CONTINUED)

SPECIES	NO. OF IND. TOTAL	PERCENT (C.)	NO. OF IND. TOTAL	PERCENT (E.)
<i>NEPHIYS BUCERA</i>	50	5.682	22	1.321
<i>NEPHIYS PICTA</i>	1	0.114	5	C.300
<i>ONUPPIA EREMITA OCULATA</i>	28	3.182	15	0.901
<i>ORBINIA RISERTI</i>	0	0.0	9	0.541
<i>PARAGNIS FULGENS</i>	11	1.250	0	0.0
<i>PHYLLODOCE ARENAE</i>	3	0.341	16	1.141
<i>PRIONOSPIA CRISTATA</i>	2	0.227	3	0.180
<i>RULLIERINERIA MEXICANA</i>	0	0.0	1	C.060
<i>SCOLELEPIS TEXANA</i>	0	0.0	1	0.060
<i>SCOLOPICS ARMIGER</i>	0	0.0	1	0.060
<i>SIGALION ARENICOLA</i>	0	0.0	2	0.120
<i>SIGAMBRA BASSI</i>	0	0.0	2	C.120
<i>SPIO PETIBONEAE</i>	20	2.273	7	0.420
<i>SPIOPHANES BOMBYX</i>	6	0.682	5	0.541
<i>SIREPTOSYLLIS ARENAE</i>	4	0.455	0	0.0
 SIPUNCULIDA (PEANUT WORMS)				
UNIDENTIFIED SP.	1	0.114	3	0.180
 ARTHROPODA (CRUSTACEANS)				
AMPHIPODA				
<i>ACANIOMOHAUSTORIUS</i> SP.	5	1.023	0	0.0
<i>AMPELISCA VERRILLI</i>	0	0.0	1	0.060
<i>LISTRIELLA</i> SP.	0	0.0	2	0.120
<i>LYSIANOPSIS</i> SP.	0	0.0	1	0.060
<i>MONOCULODES</i> SP.	5	1.023	13	0.781
<i>PROTOHAUSTORIUS</i> SP.	246	27.955	245	14.715
<i>PSEUDOCHALSTORIUS</i> SP.	10	1.136	66	3.964
<i>PSEUDOPLATYISCHNODPUS</i> SP.	37	4.205	152	9.129
<i>SYNCHELIDIUM</i> SP.	15	1.705	15	0.901
ANCRURA				
<i>ALBLINEA PAREIII</i>	3	0.341	1	0.060
BRACHYLCA				
<i>PINNIXIA CRISTATA</i>	4	0.455	0	0.0
<i>PINNOTHERES</i> SP.	3	0.341	5	C.300
<i>PORTUNUS</i> SP.	2	0.341	2	C.120
CALYTRASSIDAE				
<i>CALLIANASSA JAMAICENSIS</i>	0	0.0	4	C.240
CARIDEA				
<i>HIPPOCLYTE PLEUROCANTHA</i>	0	0.0	2	0.120
<i>PROCESSA HEMPHILLI</i>	8	0.909	2	C.120
CLIMACEA				
<i>CYCLAPSIS</i> SP.	18	2.045	8	0.480
<i>CYCLAPSIS VARIANS</i>	14	1.591	40	2.402
<i>CYXEOSTYLIS SMITHI</i>	0	0.0	4	C.240
UNIDENTIFIED SP.	0	0.0	2	0.120
ISCOPDA				
<i>ANCINA DEPRESSUS</i>	3	0.341	0	0.0
<i>CHIRIOGIEA EXCAVATA</i>	5	1.023	0	0.0
LEPTOSTRACA				
<i>NEBALIA</i> SP.	0	0.0	5	C.300
MYSIDACEA				
<i>PRASVUS FLEXUOSUS</i>	3	0.341	0	0.0
OSTRACOLA				
UNIDENTIFIED SP.	4	0.455	2	0.120
PENAEIDAE				
<i>BRACHYPENAEUS CONSTRICTUS</i>	1	0.114	3	0.180
 ECHINODERMATA				
ECHINOIDEA (SAND COLLARS; URCHINS)				
<i>MELLIA QUINQUESPERFORATA</i>	0	0.0	2	C.120

PEPPERTREE CONDOMINIUM (STATION 5) - CONTROL & EXPERIMENTAL
 7/27/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL	PERCENT	NO. OF IND. (E.) TOTAL	PERCENT
HOLOTHUROIDEA (SEA CUCUMBERS)				
UNIDENTIFIED SP.	0	0.0	13	0.781
OPHIURICIDEA (BRITTLE STARS)				
OPHIOPHRAGMUS MOOREI	0	0.0	5	0.300
OPHIOPHRAGMUS BURDEMANI	4	0.455	0	0.0
UNIDENTIFIED SP.	1	0.114	7	0.420
HEMICHORDATA				
ENTEROPNEUSTA (ACORN WORMS)				
UNIDENTIFIED SP.	0	0.0	1	0.060
CEPHALOCHORDATA (LANCELETS)				
BRANCHIOSOMA FLORIDAEE	2	0.227	23	1.381
TOTALS	880		1665	
NO. SPECIES	57		80	
NO. IND. PER M ²	1408		2664	
S-W INDEX - H' (LN)	2.9751		2.9427	
EVENNESS - J	0.7359		0.6715	

BLUE DOLPHIN MOTEL (STATION 6) - CONTROL & EXPERIMENTAL
7/28/77

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
CNICARIA ACTINIARIA (SEA ANEMONES) UNIDENTIFIED SP.	1	0.064	0	0.0
PLATYHELMINTHES TURBELLARIA (FLATWORMS) UNIDENTIFIED SP.	0	0.0	1	0.053
NEMERTINEA (RIBBON WORMS) UNIDENTIFIED SP.	33	2.126	57	3.006
PHORCNIDA (PHORCNIDS) PHORCNIS ARCHITECTA	0	0.0	1	0.053
BRACHICERIDA (LAMP SHELLS) GLOIIDIUM PYRAMIDATA	0	0.0	19	1.002
MOLLUSCA (SHELLFISH) GASTROPODA (SNAILS)				
<i>CYLICHNELLA BIDENIAIA</i>	24	1.546	31	1.635
<i>NATICA PUSILLA</i>	1	0.064	15	0.791
<i>OLIVELLA MINUTA</i>	2	0.129	2	0.105
<i>OLIVELLA MUTICA</i>	1	0.064	4	0.211
<i>POLINICES DUPLICATUS</i>	0	0.0	1	0.053
<i>TERPERA CONCAVA</i>	1	0.064	0	0.0
<i>TURBINILLA CONRADII</i>	3	0.193	0	0.0
<i>TURBINILLA SP.</i>	11	0.709	6	0.316
PELECYPODA (CLAMS)				
<i>ERVILIA CONCENTRICIA</i>	4	0.258	1	0.053
<i>LEPIDIA SP.</i>	13	0.838	3	0.158
<i>LUCIDA MULTILINEATA</i>	18	1.160	74	3.903
<i>PERIFLUMA MARGARIACEUM</i>	0	0.0	2	0.105
<i>STIGMA SIMPSONI</i>	53	3.415	17	0.897
<i>STRIGILLA MIRABILIS</i>	4	0.258	5	0.264
<i>SELLINA ADQUISITARIATA</i>	0	0.0	1	0.053
<i>SELLINA TEXANA</i>	217	13.982	137	7.226
<i>SELLINA VERSICOLOR</i>	108	6.959	98	5.169
<i>TRACHYCARDIUM MURICATUM</i>	0	0.0	1	0.053
ANNELIDA (SEGMENTED WORMS)				
OLIGOCHAETA				
UNIDENTIFIED SP.	4	0.258	1	0.053
POLYCHAETA				
<i>APOPRIONOSPIA PYGMAEA</i>	2	0.129	4	0.211
<i>ARICIDEA FRAGILIS</i>	1	0.064	5	0.264
<i>ARMANDIA AGILIS</i>	36	2.320	27	4.589
<i>ARMANDIA MACULATA</i>	20	1.289	26	1.371
<i>BRANIA CLAVATA</i>	0	0.0	4	0.211
<i>BRANIA BELLIFLEETENSIS</i>	4	0.258	2	0.105
<i>CAPITELLA CAPITATA</i>	1	0.064	53	2.795
<i>CHONE SP.</i>	1	0.064	2	0.105
<i>DYSPODIA UNCINATA</i>	1	0.064	0	0.0
<i>ETEDORE LACTEA</i>	1	0.064	2	0.105
<i>GLYCEEA AMERICANA</i>	13	0.838	6	0.316
<i>GNOCALIA LITIGEEA</i>	0	0.0	1	0.053
<i>GYPTIS VITTATA</i>	0	0.0	10	0.527
<i>HAPLOCYCLOPS ROBUSTUS</i>	0	0.0	1	0.053
<i>LOTIUM MEDUSA</i>	1	0.064	1	0.053
<i>LUMBRICOIDES CRUZENSIS</i>	195	12.564	208	10.970
<i>PAGEOLINA FLOTA</i>	3	0.193	1	0.053

BLUE DOLPHIN MOTEL (STATION 6) - CONTROL & EXPERIMENTAL
 7/28/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.) TOTAL PERCENT	NO. OF IND. (E.) TOTAL PERCENT
<u>PAGELCNA SP.</u>	12	0.773
<u>MESOCIASTOPTERUS SAGITTARIUS</u>	9	0.580
<u>MINUSPILO CIRRIFERA</u>	1	0.064
<u>NEANITES ACUMINATA</u>	0	0.0
<u>NEPHIYS BUCERA</u>	35	2.255
<u>NEPHIYS PICTA</u>	18	1.160
<u>ONUPHIS EREMITA OCULATA</u>	8	0.515
<u>ORBINIA RISERI</u>	2	0.129
<u>PARANAIYES SPECIOSA</u>	0	0.0
<u>PARACNIS FULGENS</u>	17	1.095
<u>PHYLLODOCE ARENAE</u>	6	0.387
<u>POLYCORAS SOCIALIS</u>	2	0.129
<u>POLYCORAS TETRABRANCHIA</u>	0	0.0
<u>PRIONOSPIS CRISTATA</u>	4	0.258
<u>RULLIER INFERIS MEXICANA</u>	0	0.0
<u>SCOLELEPIS TEXANA</u>	0	0.0
<u>SCOLUDOLUS ARMIGER</u>	4	0.258
<u>SCOLUDOLUS RUBRA</u>	2	0.129
<u>SIGAMBRA BASSI</u>	1	0.064
<u>SPIO PETTIBONEAE</u>	7	0.451
<u>SPIOPHANES BOMBYX</u>	11	0.709
 <u>SIPUNCULIDA (PEANUT WORMS)</u>		
<u>UNIDENTIFIED SP.</u>	4	0.258
 <u>ARTHROPOCA (CRUSTACEANS)</u>		
<u>AMPHIPODA</u>		
<u>ACANTHOHAUSTORIUS SP.</u>	1	0.064
<u>AMPELISCA ABDITA</u>	0	0.0
<u>ERICHTHONIUS SP.</u>	0	0.0
<u>LEMBOS SP.</u>	0	0.0
<u>LISIFIELLA SP.</u>	5	0.322
<u>PELITA APPENDICULATA</u>	0	0.0
<u>BIGEFFECTOPUS SP.</u>	0	0.0
<u>MONOCULODES SP.</u>	9	0.580
<u>PROTHAUSTORIUS SP.</u>	307	19.781
<u>PSUEDCHAUSTORIUS SP.</u>	20	1.289
<u>PSUEDOPLATYISCHNOPUS SP.</u>	114	7.345
<u>SYNCEPHALIDIUM SP.</u>	23	1.482
<u>BRACHYURA</u>		
<u>CALLINETES SAPIDUS</u>	0	0.0
<u>DISSODACTYLUS MELLIAE</u>	13	0.838
<u>PINNIXIA SAYANA</u>	0	0.0
<u>CALLIANASSIDAE</u>		
<u>CALLIANASSA JAMAICENSIS</u>	4	0.258
<u>CARIDEA</u>		
<u>HIPPOLYTE PLURICANTHA</u>	0	0.0
<u>PROCESSA HEMPHILLI</u>	1	0.064
<u>CUMACEA</u>		
<u>CYCLAFESIS SP.</u>	25	1.611
<u>CYCLAFESIS VARIANS</u>	38	2.448
<u>CYCLOSTYLIS SMITHI</u>	3	0.193
<u>LEPTOSTRACA</u>		
<u>NEBALIA SP.</u>	4	0.258
<u>OSTRACODA</u>		
<u>UNIDENTIFIED SP.</u>	17	1.095
<u>STOMATOPODA</u>		
<u>ACANTHOSQUILLA BIMINIENSIS</u>	0	0.0
 <u>ECHINOFORMATA</u>		
<u>ECHINOIDEA (SAND DOLLARS; URCHINS)</u>		

BLUE DOLPHIN MOTEL (STATION 6) - CONTROL & EXPERIMENTAL
 7/28/77
 (CONTINUED)

SPECIES	NO. OF IND. (C.)		NO. OF IND. (E.)	
	TOTAL	PERCENT	TOTAL	PERCENT
<i>MELLITA GUINQUIESPERFORATA</i>	18	1.160	35	1.846
<i>OPHTUROCTEAE</i> (BRITTLE STARS)	0	0.0	3	0.158
<i>OPHICPHRAGMUS BURDEMANI</i>	3	0.193	9	0.475
UNIDENTIFIED SP.				
HEMICORDATA				
<i>ENTEROPNEUSTA</i> (ACRON WORMS)	1	0.064	2	0.105
UNIDENTIFIED SP.				
CEPHALOCHORDATA (LANCELETS)				
<i>BRANCHIOSTOMA FLORIDA</i>	26	1.675	43	2.268
TOTALS	1552		1896	
NO. SPECIES		66		83
NO. IND. PER M ²		2483		3034
S-W INDEX - H' (LN)		3.0020		3.3704
EVENNESS - J		0.7165		0.7627

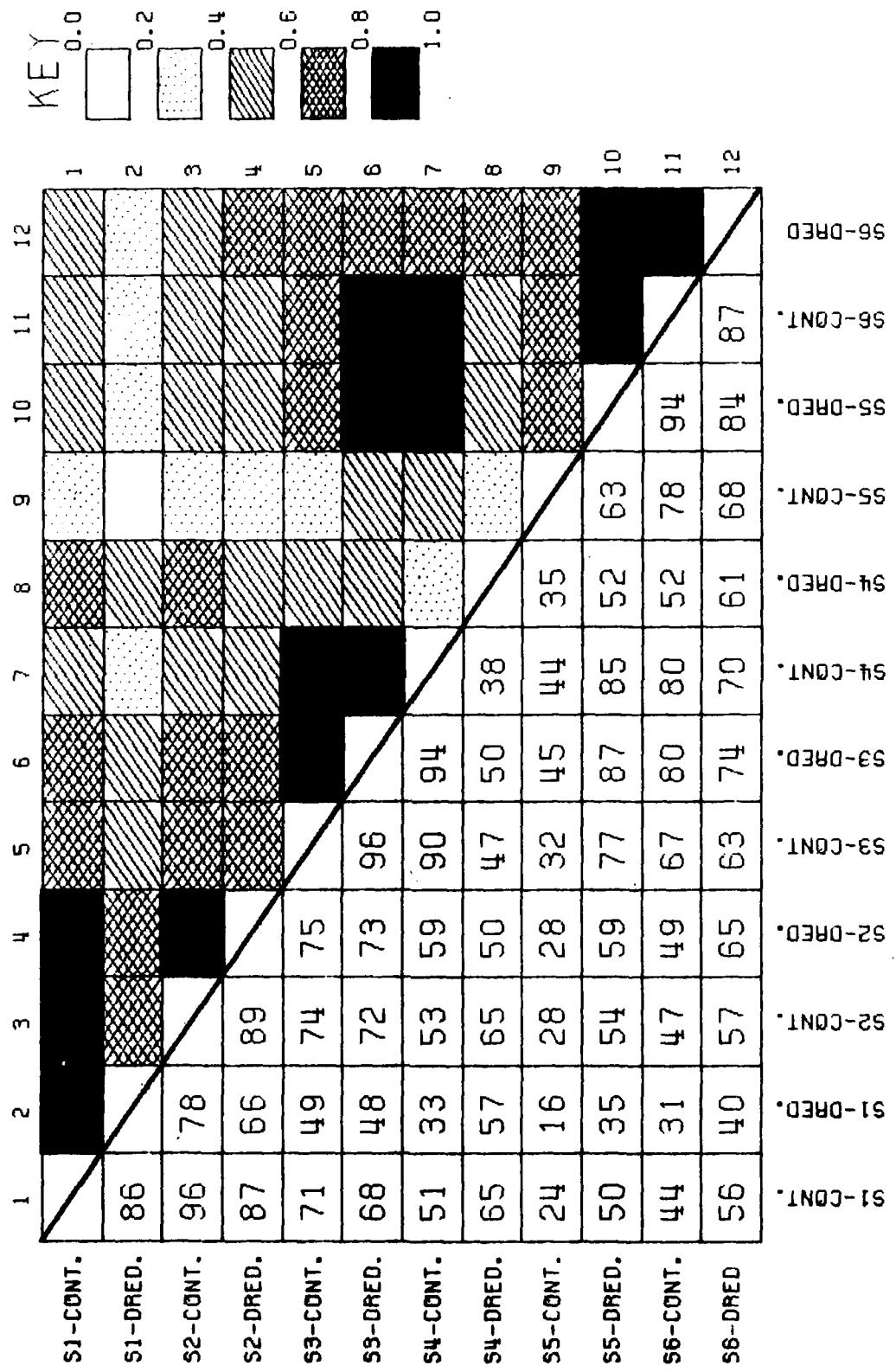
APPENDIX D
FAUNAL SIMILARITY MATRICES

Similarity matrices for time-sequence samples at station 1, and one time sampling at stations 1 to 6 (Morisita's Index without transformations or standardizations, and with matrix values multiplied by 100)--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

TREASURE ISLAND (4/76-11/77)

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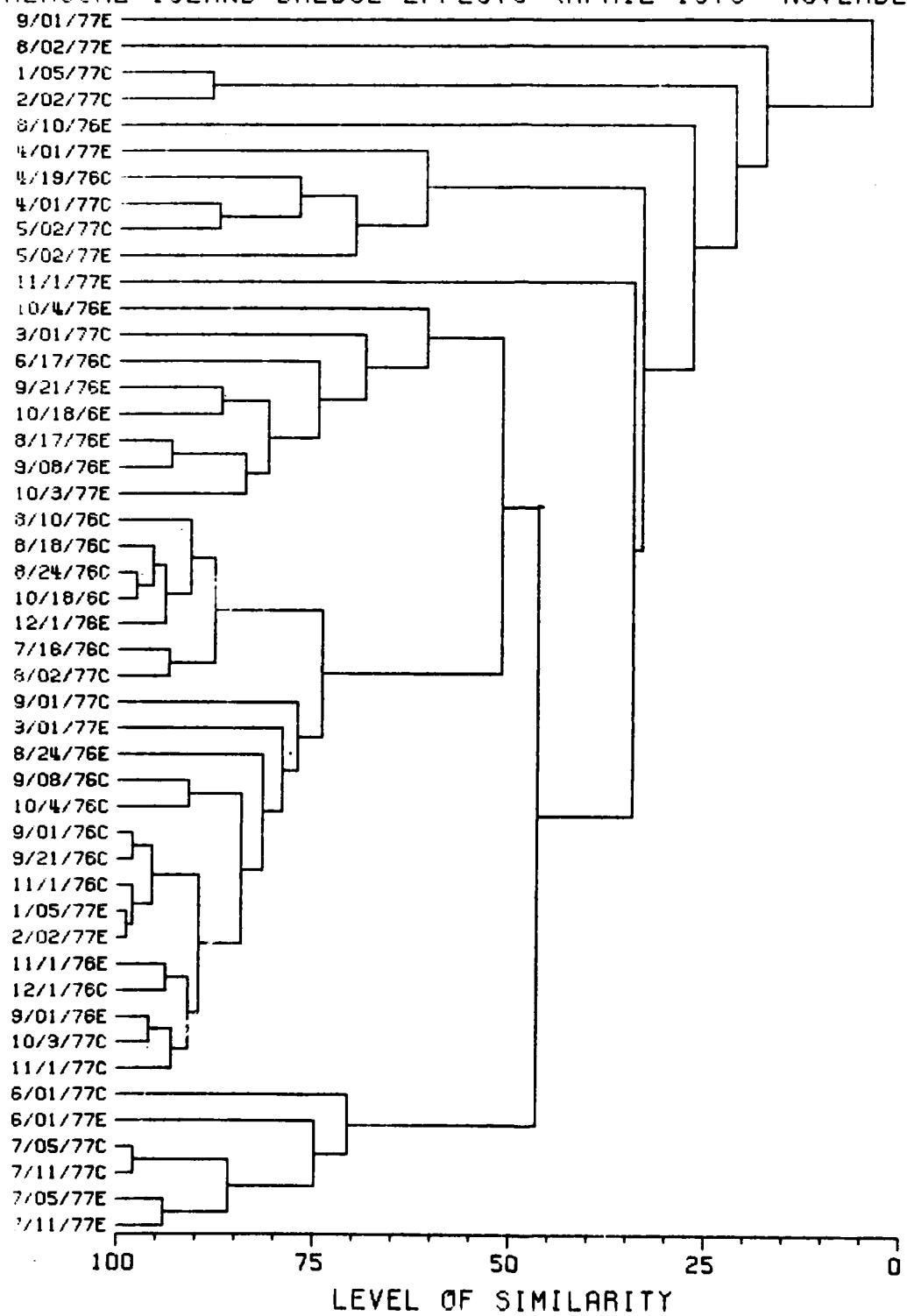
STATIONS 1-6 (7/11/77)



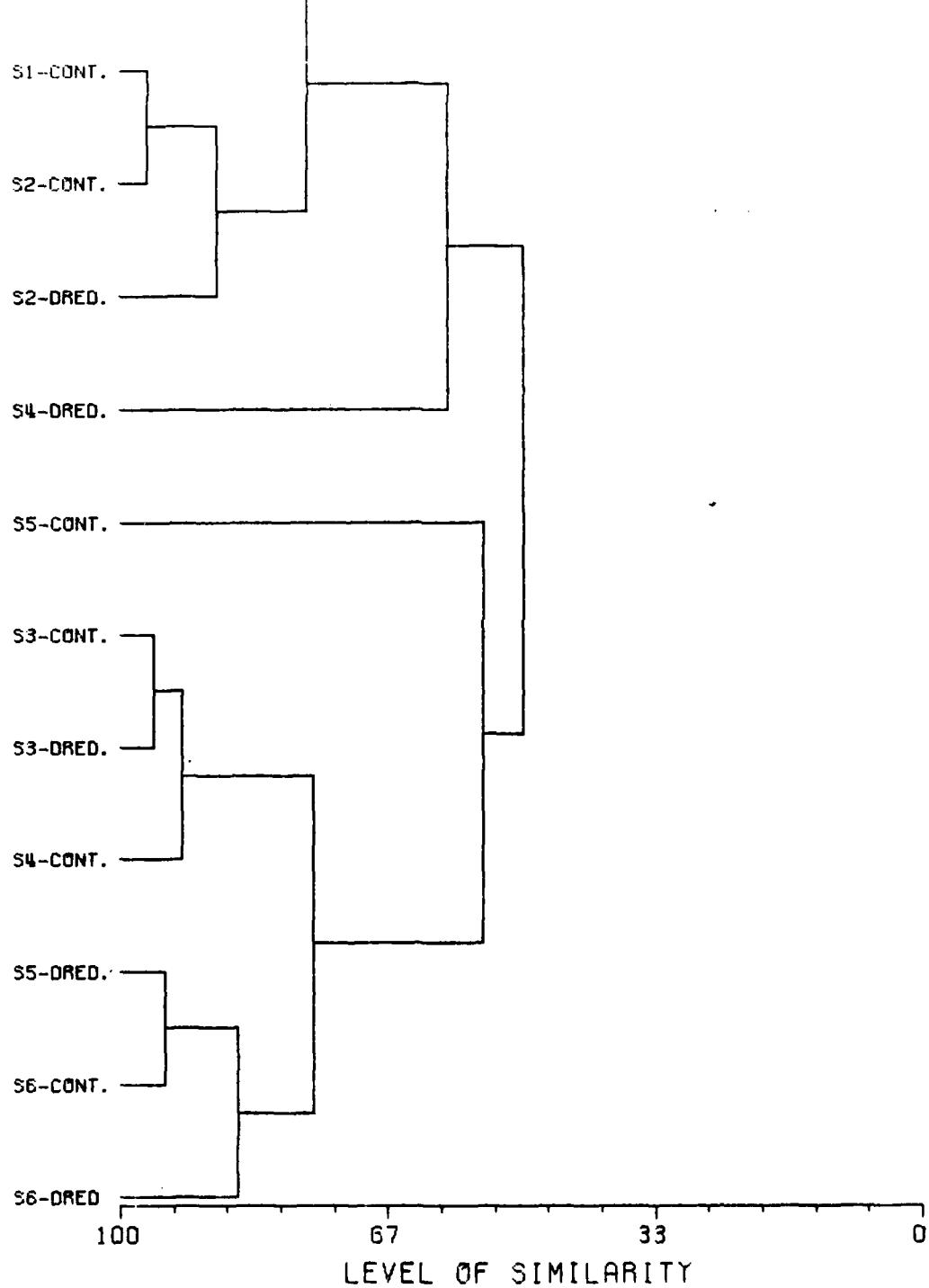
APPENDIX E
FAUNAL CLASSIFICATION ANALYSES

Classification analyses for time-sequence samples at station 1, and one-time sampling at stations 1 to 6 (Morisita's Index without transformations or standardizations)--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

TREASURE ISLAND DREDGE EFFECTS (APRIL 1976- NOVEMBER 1977)



BEACH RESTORATION - ONE YEAR AFTER DREDGING AT SIX
S1-DRED. STATIONS

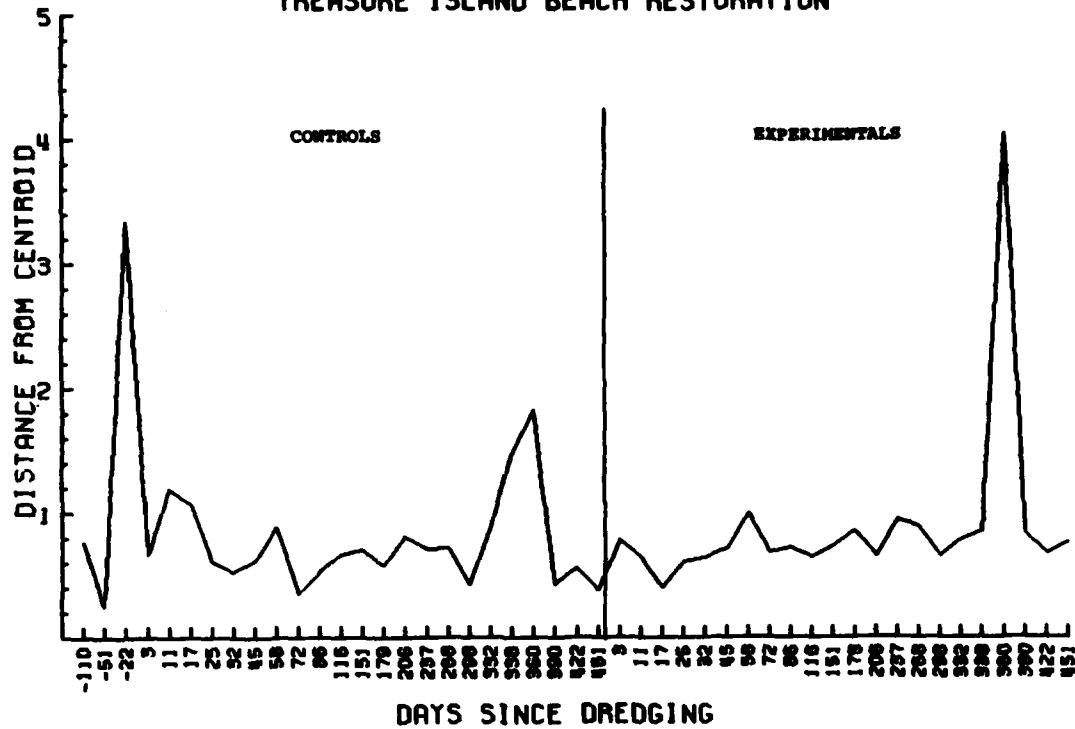


APPENDIX F

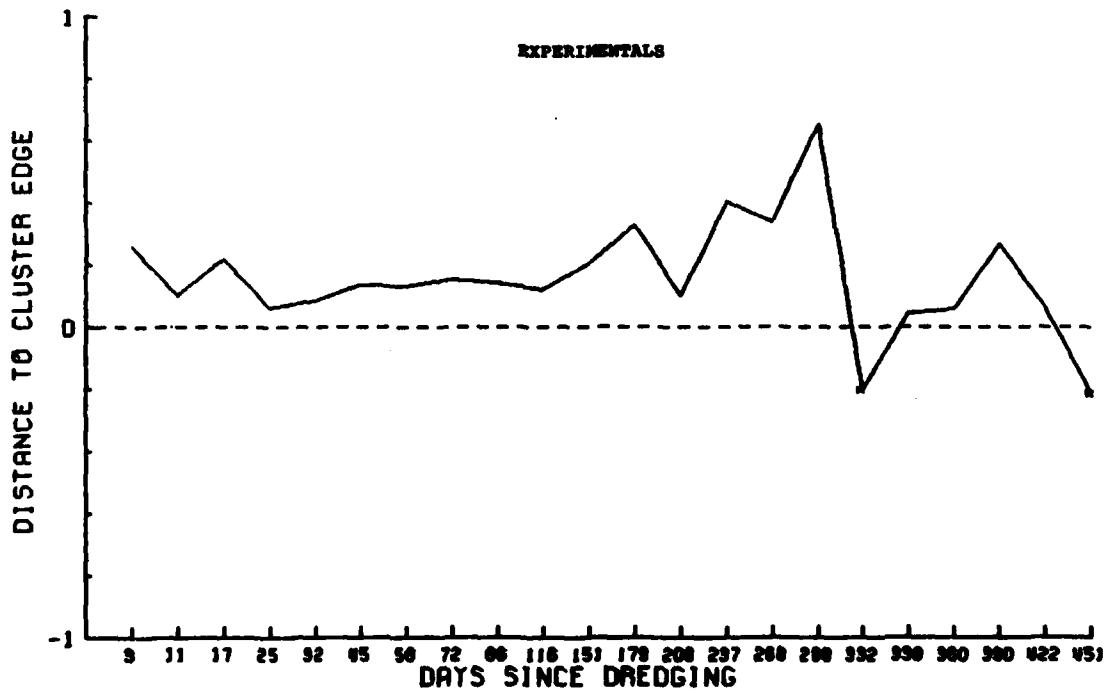
STABILITY ANALYSES

Stability analyses for time-sequence samples at station 1 showing sample variations and time to faunal recovery--beach restoration project, Panama City Beach, Florida (November 1974 to November 1977).

TREASURE ISLAND BEACH RESTORATION



TREASURE ISLAND BEACH RESTORATION



Saloman, Carl H.
Benthic community response to dredging borrow pits, Panama City Beach, Florida / by Carl H. Saloman, Steven P. Naughton, and John L. Taylor. --Fort Belvoir, Va. : U.S. Army Coastal Engineering Research Center ; Springfield, Va. : available from NTIS, 1982. [138] p. : ill. ; 28 cm. --(Miscellaneous report ; no. 82-3)
Prepared for Coastal Engineering Research Center by National Marine Fisheries Service, Southeast Fisheries Center; DACH72-81-M-0198. Report gives biological and physical oceanographic data from baseline work, and studies of dredged and undredged sediments before and after dredging (9-meter contour) at Panama City Beach, Florida. Analyses of hydrology, sediments, and benthos are included.
1. Beach nourishment--Environmental aspects--Florida--Panama City Beach. 2. Benthos. 3. Dredging. 4. Panama City Beach (Fla.).
I. Naughton, Steven P. II. Taylor, John L. III. Coastal Engineering Research Center (U.S.). IV. United States. National Marine Fisheries Service. V. Title. VI. Series: Miscellaneous report (Coastal Engineering Research Center (U.S.)); no. 82-3. TC203 .U581ar no. 82-3 627

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Prepared for Coastal Engineering Research Center by National Marine Fisheries Service, Southeast Fisheries Center; DACH72-81-M-0198. Report gives biological and physical oceanographic data from baseline work, and studies of dredged and undredged sediments before and after dredging (9-meter contour) at Panama City Beach, Florida. Analyses of hydrology, sediments, and benthos are included.
1. Beach nourishment--Environmental aspects--Florida--Panama City Beach. 2. Benthos. 3. Dredging. 4. Panama City Beach (Fla.).
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